

MINING CONGRESS JOURNAL

NOVEMBER, 1940

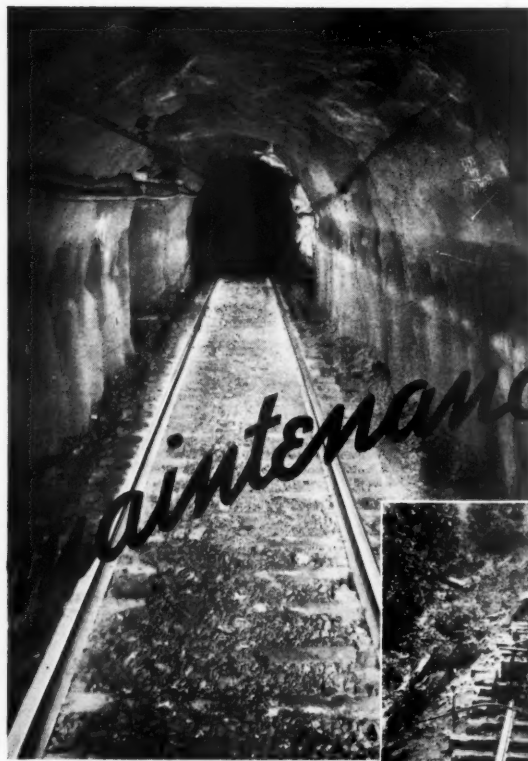


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MINING CONGRESS JOURNAL

Vol. 26

OCTOBER, 1940

No. 10

In November

the role of minerals in the present war and in our national defense program will highlight the issue.

Also scheduled is an excellent group of operating articles featuring the latest developments and equipment in metal mining; progress in mine safety; coal preparation; and application of alternating current to mechanized equipment at a leading coal plant.

Look for your copy.

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Opinions expressed by authors within these pages are their own, and do not necessarily represent those of the American Mining Congress

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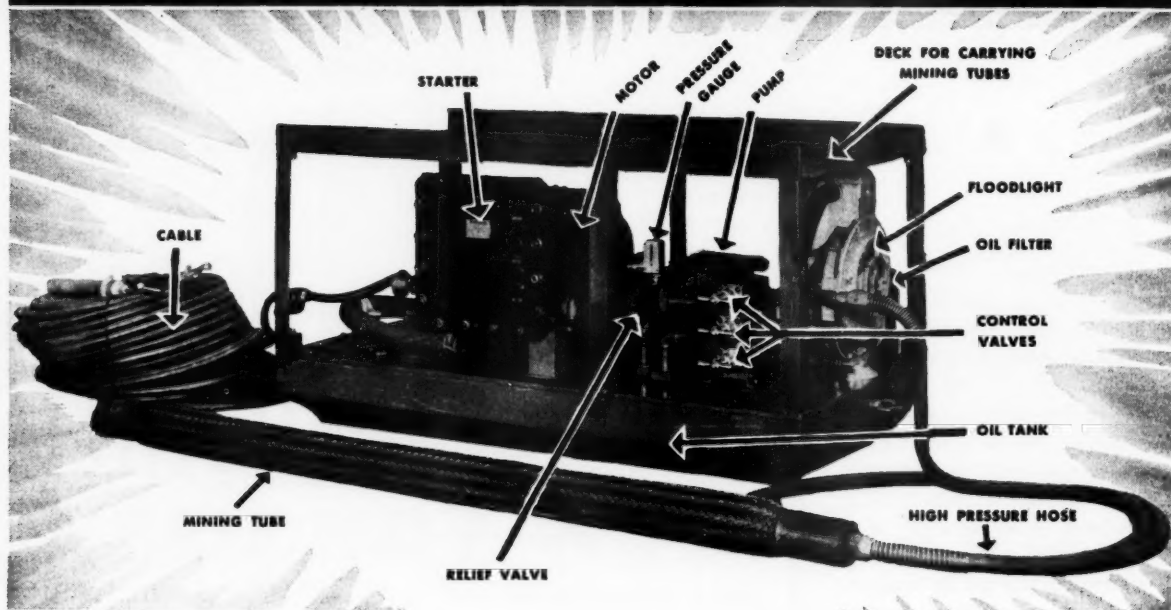
Julian D. Conover, Secretary

OCTOBER, 1940

3

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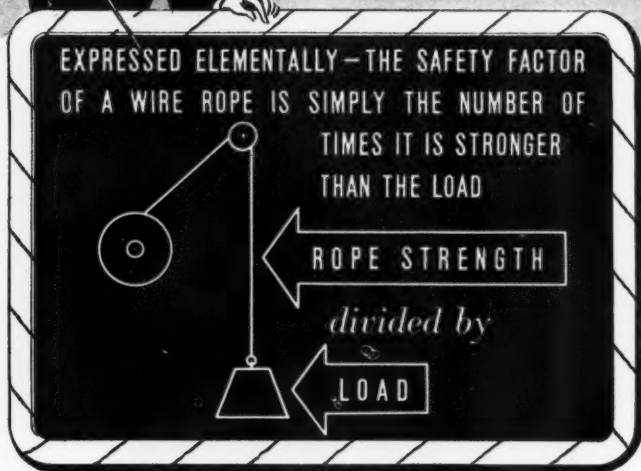
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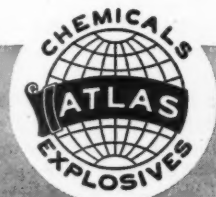
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MINING CONGRESS JOURNAL

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OCTOBER, 1940

No. 10

UNFINISHED BUSINESS

THE excess-profits tax bill as it has now been enacted is far from being a fair, intelligible and administrable plan for taxing excess profits. However, even though its deficiencies are many, it is a definite improvement over the bill passed by the House. It does at least give some evidence of trying to deal fairly with the smaller corporations and those who would be quite unjustly treated under a rigid technical law which gave little or no consideration to the special conditions applicable to many mining and other companies. The Western Congressmen and Senators, particularly those of the Rocky Mountain group, have shown themselves quite appreciative of the situation of the mining companies located 1,000 miles or more from Washington who would be faced with a difficult, involved, technical bill which not even the best attorneys and accountants seemed able to interpret. This group did seem to understand that mining companies are not blessed with regularly recurring amounts of net income uniformly received from year to year, and that they do not receive normally in each year a steady, fair return on capital. They seemed to understand that an excess profits tax cannot be rigidly imposed on any excess of a single year's income over the average for the base period or over some fixed percentage of return on invested capital. They recognized that mining companies struggle through years of effort or adversity in the hope that possibly in a few years enough may be received to repay for the risk and effort and investment required. In the particular case of strategic minerals, now so vital to the national defense, they provided full exemption from the excess profits tax. Undoubtedly there are companies in other lines of industry which are also faced with their own difficulties, but some of these features seem to stand out more clearly and be better recognized as to mines than they are in other lines of business. At least the Representatives from the mining states seem generally to have been more appreciative of the problems and difficulties involved, and they have generally given their best efforts to see that the industry of the states they represent shall not be hampered or sacrificed in an overzealous endeavor to force on business enterprises a rigid tax system that would work serious injustice and do great harm, often to the very enterprises to which such a tax system should least apply. It is regrettable that Congress as a whole has not shown itself more appreciative of these conditions.

There is general agreement that excessive and unreasonable profits, particularly if they arise from the country's expenditures for defense, may fairly be subjected to an excess profits tax. The difficulty is in determining what should be considered as excessive and unreasonable profits. This difficulty is not solved by setting up some arbitrary definition which ignores differences in conditions appli-

cable to various industries or to various companies in the same industry. It is not solved by adopting a false assumption that, if the income of a single year is more than a specified average, the excess received in that year represents excessive profits. The amount received in a good year may only be such an amount as is necessary to offset the losses or the low returns of poor years. We must not forget that the law's definitions of income are themselves somewhat faulty and often result in taxing as income of a single year what is really a return of capital.

Admittedly it is not easy to frame a definition of what profits should properly be considered as subject to an excess profits tax. Perhaps the best standard we can get is the negative one; that amounts which are only the normal and usual profits of industry—sufficient to cover the risks involved, to return the capital employed, and commensurate with the efforts and ability required—should in no case be considered or taxed as excess profits.

The House bill greatly sinned in its failure to recognize this. Its failure to do so was to some extent concealed in its marvelous conglomeration of verbiage. This was probably the only reason why it was ever reported to or passed by the House. No one ever understood or could attempt to explain it. Probably no member of the House, even of the committee which reported it, had ever read it through from beginning to end. The volume of computations which it would have required were beyond all reason, but no one seemed to have thought of that when the bill was being drafted or when it was hastily reported and passed.

The Senate bill is a great improvement, both in its wording and in its attempt fairly to recognize the various situations of those to whom the law will apply.

The bill as finally passed is in many respects a great improvement both in its wording and in its attempt to give some recognition to the various situations of those to whom the law will apply, even though it still retains too much of the confusions, uncertainties and arbitrariness of the House bill.

The law does have this advantage over the House bill: as it makes some better approach to reasonableness and intelligibility, those unfair, arbitrary, confused provisions which still remain in the law can be better seen and recognized.

Still it is involved, complicated, full of intricate and almost unintelligible language, and may in many cases be bitterly unfair to taxpayers who should not suffer its rigors. A little less haste, somewhat less eagerness for revenue at any cost, and greater desire to be fair to the taxpayers, should have resulted in a much better tax law and one which would not so soon have to be revised.

There are at least four principles which require reconsideration: (1) The imposition of graduated tax rates based solely upon the dollar amount of income, regardless of the invested capital, of prior earnings, and the number of stockholders; (2) the discriminations against the average earnings method—such as the so-called discount of 5 percent, and the refusal to eliminate all deficit years, and to base the computation upon an average of three out of four "pre-emergency" years; (3) the unnecessary limitations imposed upon the "excess profits credit" carryover; and (4) the special relief provision (section 722). We believe both common sense and equity compel reconsideration of these matters by the new Congress.

MECHANIZATION IN LOGAN COUNTY

By THOS. A. STROUP

Assistant to Operating Vice President
West Virginia Coal & Coke Corp.

LOGAN COUNTY, W. Va., is one of the most important coal producing counties in the entire nation. The first production of record was in 1905, when 142,930 tons were shipped. This increased rapidly as the railroad was extended up the various creeks until a record production of 30,222,360 tons was mined in 1925, after which there was a gradual decline to the present level of 12 to 15 million tons.

The impact of this decline is shown below:

Year	Nat'l Production Tons	W. Va.'s % of Total	Logan County % of Total
1925	520,052,741	33.91%	5.81%
1929	534,988,593	25.89	3.73
1932	309,709,872	27.64	4.23
1934	359,368,022	27.38	3.71
1936	439,087,903	26.86	3.62
1937	445,531,449	26.63	3.46
1938	348,544,764	26.76	3.42
1939	393,065,000*	27.46	3.76

* Preliminary

This enviable position in the nation's coal markets has been maintained solely by modernization—that is, by mechanization to improve cost levels, and by modern preparation facilities, which place the coal on the market at the highest possible quality as regards B.T.U.'s, ash, and fusion temperature of the ash.

The "Logan Field" constitutes only that part of Logan County lying on the waters of the Guyan River and its tributaries, and served by the Guyan River branch of the C. & O. Railroad. The portion of the county located on the branches of Little Coal River and served by the Coal River branch of the C. & O. is part of the "Kanawha Field." The statistics in this article cover the entire county.



Coal preparation has gone hand in hand with mechanization in Logan County. One of the new tipples in the District with a very modernistic appearance

● *Enviably Position of this District as a Substantial Source of the Nation's Coal Has Been Maintained Solely by Modernization—Including Mechanization of its Mines to Improve Cost Levels, and Modern Preparation Facilities*

GEOLOGY OF THE COUNTY

The topography of the region is very rugged, consisting of narrow V-shaped valleys with high ridges between. In the northern end of the county the elevation of the ridges is from 600 to 700 ft. above the main stream valleys. In the southern part, however, the relief becomes as much as 1,600 ft.

The Guyan River enters the county near the town of Gilbert at an elevation of 833 ft. above sea level and leaves near Big Creek at an elevation of 550 ft. above sea level, the total distance of flow being about 58 miles and the air line distance about 31 miles.

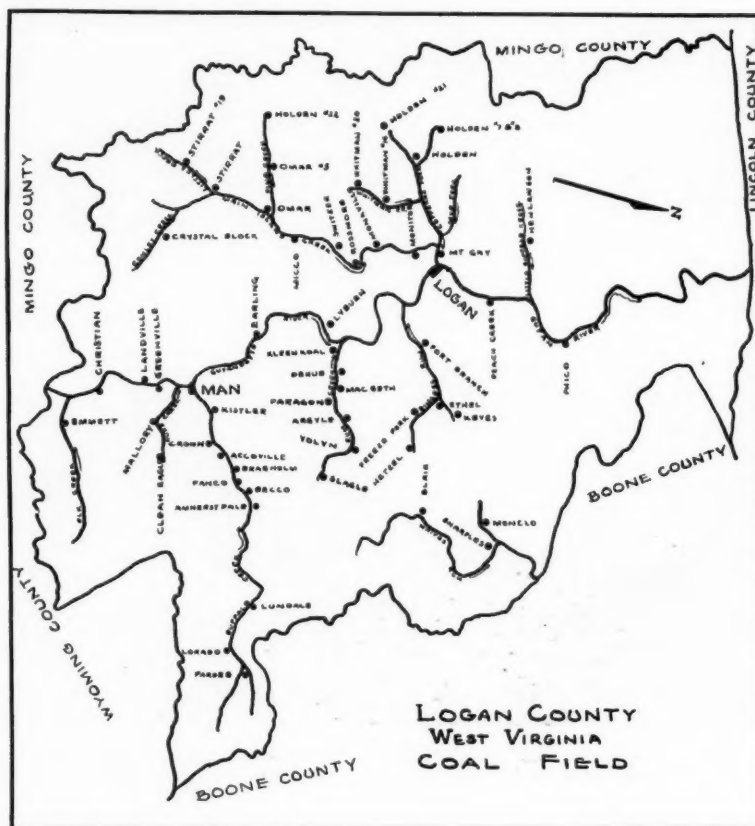
The course of the streams is uninfluenced by the structure, and there are no waterfalls and no ponding, due to the absence of extremely hard beds of rock. This condition has made for relatively easy railroad building and

has thus contributed greatly to the rapid development of the coal field.

The slope of the hillsides is broken by numerous narrow benches which mark the less resistant strata of shale, and many of the firmer sandstone develop conspicuous cliffs.

The surface rocks include practically the entire section of the Kanawha series of the Pottsville, and the lower portion of the Allegheny series. These formations consist of alternating beds of sandstone, shale and coal, with a few inconspicuous beds of impure limestone, some of which carry fossils and are thus of great importance in correlating the strata.

The governing structural feature is the Coalburg Syncline, an extensive downward fold of the strata, which crosses the county from east to west, entering at Clothier on the east, thence closely following the Valley of Dingess Run to cross the Guyan River at Mc-



blocky gray splints to very friable gas coals. Being multiple bedded, there are often several different kinds of coal in one face, and frequent partings of slate and bone are the rule. Coals adapted to many uses are mined in Logan County, but the bulk of the output is marketed as industrial and railroad fuel, and for domestic heating, and hence they are competitive with the coals of many other fields, particularly those that are closer to the great markets, where their position is maintained solely by quality.

MECHANIZATION

The wide variety of coals, the greatly varying thickness of the beds, and the almost universal presence of impurities in the seams has made Logan County the scene of experiments and tests with practically all conceivable types of mechanization.

The County has always been in the forefront in cutting and haulage practices. Heavy track mounted cutters have been used since the inception of commercial mining, and "slabbing" machines for cutting out slate or rash partings have been standard equipment for many years. Animal haulage disappeared from the field in the middle twenties, and the gathering and main-line equipment has always compared favorably with the best. Hence the county had an excellent background for the introduction and use of mechanical loading equipment.

The county has always been "clean coal minded," and the preparation at the face by hand loaders has always been of the best. Selective mining is practiced in some mines where the character of the different benches of the seam requires it, and careful distribution of machine cuttings and of coal from different sections of a mine to insure uniformity as loaded for shipment, has long been practiced. Thus the hand-loading practices were, and are, thoroughly modern, and a high quality product has always been the rule. Modern requirements, however, have made necessary a different standard of preparation. Coal must be uniform, and the composition and consist must be controlled. Hence the recent preparation trend is not merely to clean the coal of the additional refuse that inevitably accompanies mechanical mining, but it must meet these modern requirements as to quality as well.

Mobile Loaders

The earliest attempts at mechanical loading involved the use of mobile loading machines, and were started in

Connell, thence it passes through the forks of Whitman Creek and leaves the county near the head of the Laurel Fork of Pine Creek.

This structure is not symmetrical about its axis. On the northwest flanks east of the Guyan River the rise is about 200 ft. to the mile for the first 2½ miles after which there is a leveling off. West of the Guyan the slope on this flank is much more gentle. Southeast of the axis the rise is quite uniform at 75 ft. to the mile.

Coal production in Logan County comes from four coal-bearing horizons, as follows:

Local Name	Geological Survey Name
Eagle	No. 2 Gas
Draper	Alma
Island Creek	Cedar Grove
Chilton	Chilton

All these seams are multiple bedded, and the above designations are used whenever the entire seam or one of its splits is worked. The relation of these horizons is shown in Fig. 1.

The Geological Survey lists 18 "minable" seams and 16 that are too thin for mining, but most of the so-called "minable" beds will not be commercially available for a long time to come.

These coals vary widely in physical and chemical characteristics. All are

high volatile, and the inherent ash is usually low. They range from hard

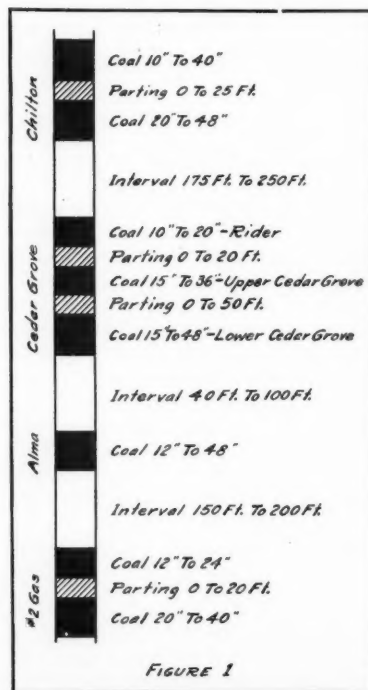


FIGURE 1

1914 at Gay Coal and Coke Company, and in 1920 at Mallory Coal Company, both operations being thick coal. Gay has been a completely mechanized operation since 1920 and has been one of the outstanding mechanized mines in the industry.

Loading machines of all types are being used in coal ranging from 44 in. and upwards in thickness. Recently two installations of rubber tired gathering units have been made. In general the room and pillar system is used, but one mine successfully employs loading machines on 300-ft. retreating faces. Pillars are drawn in about half the mines, and the application of machines to this work has been successful.

Conveyor Mining

Conveyor mining was not attempted until 1928 when an installation was made in the lower split of the Eagle Seam at Mallory. Conveyor mining has grown by leaps and bounds, as more and more thin coal has been developed. All types of conveyors are in use, chains and shakers finding about equal application. The general practice is to load onto the conveyors by hand, but there are a few installations of self-loading conveyors and small loading machines are being experimented with.

The use of belt conveyors for gathering from the room units is not widespread but there is at least one highly successful installation of this type. Pit car loaders have had a very limited application.

The customary conveyor mining plan is to drive rooms off both sides of a two or three entry butt. Rooms vary in width from 20 ft. to 45 ft., and coal is recovered on both the advance and retreat in most cases. The usual room depth is 300 ft., and the "ribs" between adjacent rooms are invariably left in.

The efficiency of conveyor mining in Logan County compares favorably with other districts. So many factors enter into conveyor results that strict comparisons or standards are of no great value. The height of the coal and the percentage of coarse coal desired are among the governing factors. Logan County markets a large tonnage as lump coal, and as the demand for this coal is at least not decreasing, the conveyor mines often sacrifice efficiency in order to obtain more and larger lump coal.

Although some companies made notable experiments, and carried out a vast amount of planning and "paper work," it was not until 1934 that the

Loading
coal
onto
conveyor



economic set-up became favorable for extensive mechanization. In that year only five mines had any sort of mechanization, but since then the increase has been phenomenal.

ty line. In this area the Lower bench is a thin but very pure coal. To the southwest the Rider seam evidently disappears, but the Upper and Lower benches persist and are correlated with

Year	No. Mines	No. Loading Machines	No. Conveyors	Production	% of Total Production
1934	5	4	4	177,606	1.3%
1935	11	14	4	519,925	3.9%

For 1936 and subsequent years the tonnage figures for mobile loaders and conveyors are separated.

the "Thacker's" of the Tug River section and the "Nos. 3 and 4 Elkhorns" of Kentucky.

Year	No. Mines	No. Loading Machines	Production	No. Conveyors	Production	% of Total Production
1936	18	32	2,777,623	15	403,355	20.0%
1937	23	48	4,067,169	37	910,581	32.2%
1938	36	68	4,251,018	136	1,417,703	47.5%
1939	35	69	6,087,916	139	2,462,318	57.1%

Island Creek Seam

The Island Creek (Cedar Grove) seam, which is by far the most important in the county, is a coal bearing horizon consisting of three distinct benches, which, even where they coalesce, retain their distinctive physical and chemical characteristics. These benches are known locally as the "Lower," the "Upper," and the "Rider." In the extensive basin at Holden and along Main Island Creek as far south as Omar, and along Pine Creek the "Lower" and "Upper" benches are together, with a parting varying from 0 to 3 ft., making a seam from 5 to 8 ft. in thickness. In a small area at Omar all three benches are together, and here the height is from 9 to 11 ft. South and east of this area the Rider remains with the Upper bench, constituting the "Upper Island Creek," which is extensively mined. The parting between the Upper and Lower benches rapidly thickens in this direction and reaches as much as 50 ft. at the head of Main Island Creek and eastward to the coun-

"In the "Double" seam the roof is usually, but not always, good, and mechanization is by mobile loaders on caterpillars or tracks. While tonnages per machine are considered satisfactory the presence of much rock and refuse in the seam reduces the net tonnage very much and the high averages per machine attained in more favored districts will probably never be reached. Of the ten large plants operating this coal, eight handle solely machine-loaded coal, and eight are equipped with mechanical cleaning of some kind.

The drilling practice is worthy of note, as the use of track-mounted, self-propelled, double-arm drilling machines is the rule. These machines are operated by two men, and because of their ability to drill flat holes near the bottom or the top they are of great value, particularly where cardox is used. This coal is tightly frozen to the bottom and is an extremely difficult coal to shoot, particularly where the cut is in the middle slate. Where bottom cut the hard bands of impurities also complicates the problem of blasting.

The Upper Island Creek (40 in. to

66 in. thick) is operated by seven mines, and mechanization is both by mobile loaders and conveyors, with considerable hand loading. The Lower Island Creek is operated by conveyors at six mines, and it is notable that there is no hand loading into mine cars in this seam, which is of constantly increasing importance because of its high quality.

Eagle Seam

The Eagle Coal (No. 2 Gas) ranks next in importance to the Island Creek; it reaches its best development in the Rum Creek basin where it is about 5 ft. thick. It is an excellent by-product and gas coal, and most of the output is used for these purposes. South of Rum Creek a band of slate comes in near the top third of the bed beyond which only the bottom split is workable, and that as thin coal (30 in. to 36 in.). The Eagle Coal or its lower split is operated at 13 mines, and mechanization consists of both mobile loaders and conveyors; however, the bulk of the tonnage is produced by

hand loading. By exercising great care this coal can usually be loaded clean enough for the market, but 5 of the tipples have mechanical cleaning arrangements of some kind.

Chilton Coal

The Chilton Coal is third in importance. It is double seam, but the benches are close enough together to be worked as one in the area around the headwaters of Dingess Run and at Blair and Sharples on the Spruce Fork of Little Coal River. Elsewhere only one bench, usually the lower, is thick enough to mine. This coal is hard and blocky, and is a fine water gas coal as well as a superior domestic and industrial fuel. It is operated by ten mines, two of which have elaborate washing plants. The mechanization of this seam is largely by conveyors, but the bulk of the tonnage is hand loaded.

Draper Seam

The Draper (Alma) Coal is operated in a small area around the city of

Logan, where it averages 46 in. thick. There are only three mines in this bed at present. It is used mostly as railroad and industrial fuel, and the nut and slack size is cleaned at two plants. Mechanization is both by mobile loaders and conveyors.

CLEANING PLANTS

In Logan County the mechanization of the mines has been only a part of the program, and mechanical cleaning has progressed much farther than merely cleaning the coal to the standards of the old hand-loading days. Modern cleaning plants now in operation include 6 with Baum jigs, 1 with Rheo Lauvers, 5 with other wet washers, and 5 with dry washers. The new concept of coal, as a uniform fuel, with unvarying chemical and physical characteristics, and a predetermined size consist, has dictated most of the recent huge investments in cleaning plants, and no view of recent progress in Logan County is complete without mention of this phase of the situation.



U. S. Consumption of Tin Rises

The consumption of tin (primary and secondary) rose 38 percent in 1939, according to the U. S. Bureau of Mines. The tin content of manufactured products was 82,428 long tons in 1939 compared with 59,774 long tons in 1938. The tin plate andterneplate industry increased its use of tin 55 percent, while the total quantity used by all other industries was 26 percent higher than in 1938.

Consumers' stocks of tin at the end of the year increased 15 percent (virgin pig tin rose 18 percent). About 65 percent thereof was held by tinplate plants. Industrial stocks of virgin pig tin actually on hand at plants in this country at the beginning of 1940 were sufficient for approximately four months' supply at the 1939 rate of consumption. Augmented by tin in transit or afloat, and at warehouses, total stocks were equivalent to only

6.5 months' supply at the beginning of 1940. Strategic supplies acquired by the Government are not included.

Most uses of primary tin increased in 1939 as follows: Tin plate andterneplate 55 percent, solder 26, babbitt 33, bronze 45, collapsible tubes 2, tinning 25, galvanizing 30, and bar tin 141. The quantities used for making foil, and tin pipe and tubing were lower by 12 percent and 36 percent, respectively.



Oregon's second largest mercury producer—the Horse Heaven mine in the central part of the state

OREGON'S QUICKSILVER INDUSTRY

IN THE early 1850's, soon after the rich gold placers of southern Oregon were discovered, cinnabar was found in sluice boxes, and a little quicksilver was recovered. In 1865 cinnabar was discovered in what became the Nonpareil-Bonanza district in northern Douglas County. Some development work was done and furnaces built at the Nonpareil and Bonanza mines respectively in 1877 and 1879. At about this time cinnabar was found in the "Meadows" area north of Gold Hill in Jackson County and some retorting was done. The Black Butte mine, south of Cottage Grove in Lane County, was discovered and produced some quicksilver near the end of the last century. Early in the present century, cinnabar was found in the Ochoco district in Crook County in central Oregon, and about the same time some activity in quicksilver mining was reported in the Tiller district of southern Douglas County. The Bretz mine in the extreme southeastern part of the State, in Malheur County, was discovered in 1917, and the nearby Opalite in 1921, although the Opalite went

● *Sporadic Small Production Between 1882 and 1924 Has Developed Into Steady Large Output Since 1927. If Current Market Conditions Continue, 1940 Production Should Reach 10,000 Flasks*

By F. W. LIBBEY

Mining Engineer
State Department of Geology &
Mineral Industries

into production several years ahead of the Bretz. Also in 1921 cinnabar was found on the Oak Grove Fork of the Clackamas River in Clackamas County, northwestern Oregon. The well-known Horse Heaven mine in Jefferson County was discovered in 1933 by A. J. Champion, experienced operator in the Ochoco region.

Many other occurrences of cinnabar are known in various parts of the State, but this brief historical sketch outlines the present known important districts.

Production Statistics

The first recorded production of quicksilver in Oregon was in 1882 when 50 flasks were reported by Mineral Resources of the United States.

The condition of the industry in succeeding years is shown by figures in Table I, taken mainly from Schuette.¹ (Record for 1882 from Mineral Resources, and for 1937, 1938, and 1939 from U. S. Bureau of Mines Minerals Yearbook and Mineral Market Reports.)

Oregon's recorded quicksilver production has been in excess of 49,000 flasks having a value of about \$4,450,000. Of this amount 45,801 flasks valued at nearly \$4,200,000 (about 94 percent) was produced in the past 13 years, and, as shown by the table, annual production during this period

¹The author acknowledges appreciatively critical reading of the manuscript by S. H. Williston, vice president in charge of operations at the Horse Heaven Mines.

¹Quicksilver in Oregon, by C. N. Schuette, Bulletin No. 4, State Department of Geology and Mineral Industries, 1938.

was fairly consistent. Also it is evident that while, naturally, the amount of output varied with the market price, the industry has been on a firmer foundation from 1927 on than prior to that time. Even with the low average price of \$59.23 per flask in 1933, production was 1,342 flasks; while in 1918, with an average price of \$123.51 per flask, production was only 702 flasks. The high prices for the four years 1927-1930 gave the industry a transfusion, making possible a healthy start. That it is continuing on a sound basis is evident to those familiar with the state's mineral industry.

Known cinnabar occurrences are relatively wide-spread, and reserves of the largest producers are being augmented; but the main reason for confidence in the industry is that those responsible for most of the production are experienced operators. They are versed in the economics of the industry and realize that engineering and the application of geology are as necessary to successful quicksilver operations as to those of the more common metals.

Properties

Bonanza Mines, Inc.—The largest Oregon producer, the Bonanza mine, operated by Bonanza Mines, Inc., is located about 8 miles east of Sutherlin, which is on U. S. Highway 99 and about 16 miles north of Roseburg. The present company started work in 1937

TABLE I. OREGON QUICKSILVER PRODUCTION, 1882-1939. NO PRODUCTION IN YEARS NOT SHOWN

Year	Flasks Produced	Number of Producing Mines	Value	Average N. Y. Price per flask
1882	50		\$1,400	\$28.00
1887	65	2	2,754	42.375
1888	32	1	1,360	42.50
1889	20	1	900	45.00
1900	200	1	8,988	44.94
1901	75	1	3,634	48.46
1905	43	1	1,558	36.22
1906	3	1	118	39.50
1908	346	2	2,032	44.17
1909	493	1	22,407	45.45
1915	5	1	441	88.17
1916	303	3	38,530	127.16
1917	388	3	41,795	107.72
1918	702	2	87,834	125.12
1919	435	3	40,620	93.38
1920	24	1	1,973	82.20
1921	25*	1	1,152	46.07
1922	2	1	119	59.74
1923	10*	1	674	67.39
1924	5*	1	353	70.69
1927	2,082	3	242,761	118.16
1928	3,759	4	458,147	123.51
1929	3,657	5	446,864	122.15
1930	2,919	7	335,711	115.01
1931	5,011	5	437,716	87.35
1932	2,523	7	146,145	57.93
1933	1,342	5	79,483	59.23
1934	3,460	11	255,573	73.87
1935	3,456	10	248,798	71.99
1936	4,126	13	329,750	79.92
1937	4,264	14	384,527	90.18
1938	4,610	13	347,917	75.47
1939	4,592		477,293	103.94
Totals	49,027		\$4,450,147	

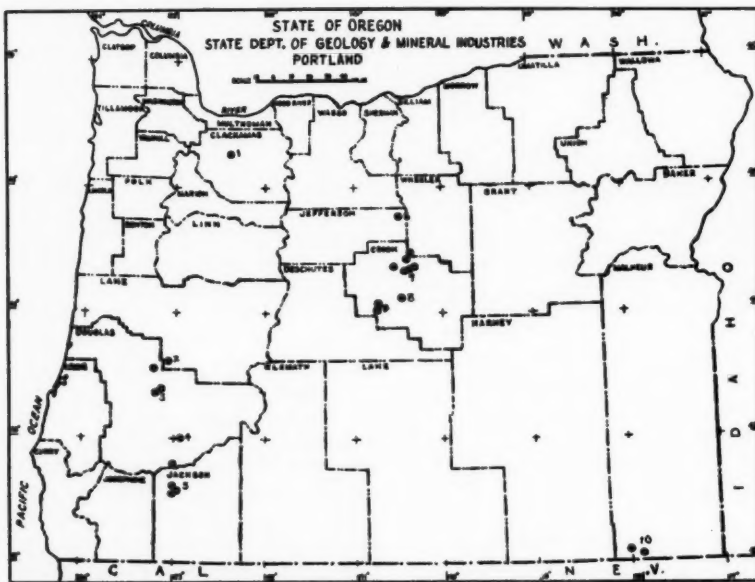
* Estimated.

when a 5-hearth Herreshoff was installed. In 1939 a Gould furnace was added and production was increased. The ore deposit has been described by both Schuette² and Wells and Waters.³

There are two active levels at the present time—the No. 11 adit, (the main haulage level) and No. 1 about 150 ft. above. Most of the stoping is being done from No. 1 adit from which broken ore is passed through chutes to No. 11 where it is drawn into 2-ton, side-dump cars and hauled to the plant in trains of six cars, by a storage battery locomotive. Development is being kept well ahead of mining, and a very material tonnage is now indicated, both between No. 11 and No. 1 and above No. 1. A winze is being sunk in ore from No. 11 and is down about 100 ft. In addition, some surface prospecting is being done with a bulldozer.

Present mining rate is about 125 tons a day, and quicksilver production varies between 400 and 500 flasks a month. Grading for a second Gould furnace has been completed and this additional equipment will be installed in the near future.

Horse Heaven Mines, Inc.—The second largest producer in the state is the Horse Heaven mine, operated as a subsidiary of the Sun Oil Company. The property is in Jefferson County,



Map of Oregon showing principal quicksilver producing localities. Producers are numbered as follows: 1. Oregon Quicksilver; 2. Black Butte; 3. Bonanza; 4. Buena Vista; 5. War Eagle; 6. Horse Heaven; 7. Mother Lode (Ochoco district); 8. Maury Mountain; 9. Bear Creek (Platner); 10. Bretz—Opalite

² Op. cit.

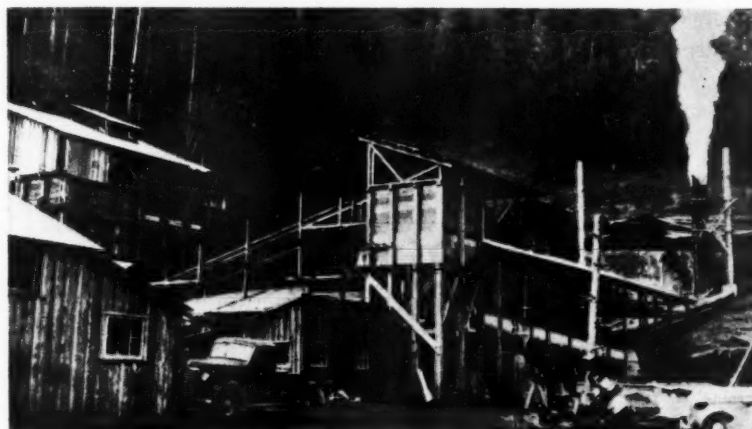
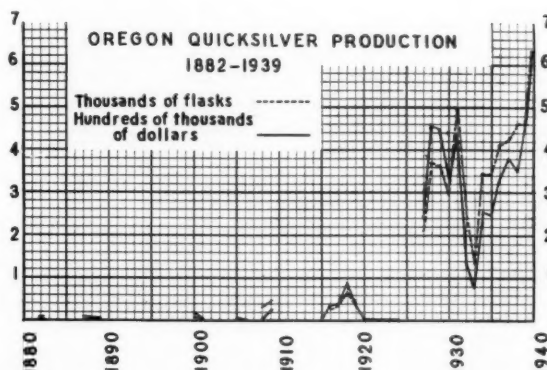
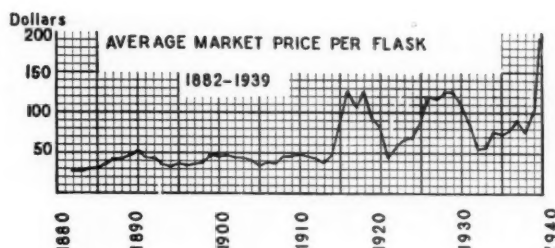
³ Quicksilver deposits of Southwestern Oregon, by Francis G. Wells and Aaron C. Waters, U. S. Geological Survey Bulletin 850, 1934.

in central Oregon, and is about 44 miles, by road, east of Madras. The present operators acquired the property in 1936, primarily to obtain mercury for mercury boilers at the parent company's refinery.

Rocks of the locality are volcanics, characteristic of the Clarno formation (Eocene). The important structural feature is the Horse Heaven fault, which has a NW-SE strike and an average dip of around 40° SW, although both strike and dip have local aberrations. Ore bodies are closely related to this fault, with ore deposition governed, for the most part, by the fault fracture system.

Furnace plant includes a 6-hearth, 10-ft. diameter Herreshoff, with current capacity about 50 tons per day. Present production is at the rate of about 175 flasks a month. Plant output is now limited by condenser capacity which is being installed. A new type of iron condensing pipe, lined with a thin porcelain coating, as well as stainless steel condenser tubes, are being tested out in the plant.

Indicative of the progressive spirit of the management is the successful use of magnetometer surveys in order to outline extensions of the fault sys-



Furnace plant at the Bonanza mine, Oregon's largest mercury producer with an output of from 400 to 500 flasks per month. Herreshoff furnace is inside building and does not show

tem, and the development of a sensitive and reliable apparatus using ultra-violet light for the detection of mercury in stack gases and calcines; electrical prospecting and diamond drilling are also used extensively.

Black Butte Mine.—This property, operated by the Quicksilver Syndicate, was for several years the leading producer of the State. It is also notable for its consistent operation on low-grade ore, although production has declined in recent years.

Black Butte is in southern Lane

County, 17 miles by road south of Cottage Grove, which is on U. S. Highway 99. The mine surface plant is on the north slope of this steep-sided butte, and underground operations are through adits. The geology has been described by Wells and Waters.⁴

Ore is being mined at present above No. 11 adit in large open stopes. Pillars are left for wall support. The broken ore is drawn into mine cars on No. 11 and hauled by a horse to a bin near the portal. From this bin the ore is drawn into cars which are lowered on a gravity plane to a crushing plant at the level of the Dennis Creek tunnel, formerly used as a haulage tunnel. The crushed ore is hauled to the furnace plant in trains by a

⁴ Op. cit.

Gould furnace installed at the Bonanza mine in 1939. A duplicate of this furnace is to be added to the plant



gasoline locomotive. Two Gould furnaces are installed, but only one is being used at present. Production is at the rate of 80 tons a day of about 3½-pound ore. Development prospecting is being done in a drift east in the fracture zone on No. 11 level and in a crosscut tunnel from the surface near the portal of the Dennis Creek tunnel.

Opalite Area

The Bretz and Opalite mines are in Malheur County, 15 and 20 miles, respectively, west of the town of McDermitt, in the extreme southeastern part of the State, far removed from other known Oregon districts. Both the Bretz and Opalite deposits are described by Schuette⁵ as in hot spring sinters of the Lahonton Lake beds.

Bretz Mine.—In 1917, Wm. Bretz found low-grade cinnabar in hard opalite in Sec. 3, T. 41 S., R. 41 E. No work other than in this hard rock was done until 1931, when some good-grade ore was found in soft material. The Bradley Mining Company, then operating the Opalite mine, after an investigation took over the Bretz and treated the ore at the Opalite plant, 11 miles away. The ore was mined with a power shovel and hauled in trucks. Up to 1936, when operations were suspended because of the supposed exhaustion of ore of profitable grade, the production given by Schuette⁶ was 7,751 flasks from 33,058 tons of ore, or an average of 17.8 pounds per ton.

During the past year, high-grade ore was again found by Wm. Bretz, and the Bradley Mining Company is again treating the Bretz ore, as well as some Opalite ore, at the Opalite plant.

Opalite Mine.—The Opalite mine was discovered by Bretz and Murphy in 1921. Their prospecting indicated an orebody of large surface extent. F. W. Bradley became interested, and formed the Mercury Mining Syndicate to operate the property. The Mercury Mining Syndicate was later succeeded in corporate structure by the Bradley Mining Company. A camp was built, and mining and treatment plants were installed.

Ore was a porous opalite, for the most part, in the form of a large surface lens-shaped mass; however, some ore was found in adjacent lake-bed material. Ore was mined in mill holes dropped through raises over grizzlies to a haulage level from which cars transported it to the crushing plant

TABLE II. QUICKSILVER PROPERTIES IN THE OCHOCO AREA, SHOWING PRODUCTION DURING FIRST HALF OF 1940

Name	Owner	Location	Production— First Half 1940—flasks	Remarks
Mother Lode	Champion Mining Co.	32 mi. from Prineville via U. S. 28 and Lookout Mt. Rd., s. 20, T. 14 S., R. 20 E.	52	Under lease from R. F. C. Active
Independent	Independent Quicksilver Company	0.5 mi. north of Mother Lode		Inactive. Extensive diamond drilling campaign in 1939
Devilsfood	William Endicott	31 mi. from Prineville on Johnson Cr. Rd. s. 16, T. 14 S., R. 20 E.	1	Inactive
Johnson Creek Mine	Homestake Mine, Inc.	0.3 mi. E. of Devilsfood Mine, s. 15, T. 14 S., R. 20 E.		Inactive
Number One Mine	Ray Whiting Lewis L. Mills	0.5 mi. E. Johnson Cr. Mine. Adjoins Blue Ridge Mine, s. 15, T. 14 S., R. 20 E.	60	Inactive at present
Blue Ridge	Central Oregon Quicksilver Co.	Just East of Number One Mine	60	Inactive at present
Staley & Barney Mine	J. E. Staley	20 mi. E. of Prineville on U. S. Highway 28	15	Active
Taylor Ranch Mine	R. Whiting	Just W. Ochoco Ranger Sta., 0.3 mi. N. of U. S. 28, s. 34, T. 13 S., R. 19 E.		Inactive
Champion Mine	Johnston Bros.	24 mi. from Prineville on U. S. 28 and 0.5 mi. S. of highway; s. 3, T. 14 S., R. 19 E.		Inactive
Maury Mtn. Mine	Eickenmeyer Bros.	4 mi. S.E. of Post in S. 10, T. 17 S., R. 19 E.	30	Active
Towner Mine	Frank C. Towner	Adjoins Maury Mtn. Mine	36	Active
Whiting Mine	Ray Whiting	Just E. of Ochoco Ranger Sta. on U. S. 28	25	Active
Oronaga Mine	Oronaga Mining Co.—R. E. Combs Gen. Mgr.	On Bear Creek in extreme southern part of district. Reached via State Highway	6	Inactive
Platner Mine	Joe Werner	0.9 mi. West of State Highway 27; 32 mi. from Prineville and West of Bear Creek	16	Active. Work started recently
O'Brien & Misner Mine	William O'Brien Norman Misner	On Bear Creek near Bridge Creek. Reached via Highway 27	3	Active
Byram & Oscar Mine	Byram-Oscar Co.	About 17 mi. E. of Prineville on U. S. 28	160	Inactive at present

by mule haulage. Furnacing was in a 4- by 70-ft. rotary furnace. Up to the end of 1937, Schuette⁶ reported that 152,400 tons of Opalite ore had been treated, which yielded 11,300 flasks, or an average of 5.6 pounds per ton.

During 1938, the Opalite operated only part of the time. In December, the furnace building was destroyed by

fire. Late in 1939, because of the appreciation in the market price of quicksilver, preparations were made to resume operations, and the property will have a material production in 1940.

Ochoco Area

The so-called Ochoco district lies east of Prineville in Crook County,

⁵ Op. cit.

⁶ Op. cit.

central Oregon. Much of the area is in the Ochoco Mountains and is reached by U. S. Highway 28. The geology of the region has been described by Wilkinson.⁷ Production in this region has been relatively small, but there is considerable activity, and

Tiller Area

This locality is in southern Douglas County, western Oregon, in the general drainage area of the South Umpqua River and Cow Creek. Surface prospecting is difficult because of heavy



there are good possibilities that a few properties will develop into fair producers.

A list of Ochoco properties with amount of production for the first six months of 1940, is given in Table II.

There are a few other prospects in this general region which have been active during 1940, but their combined production would be under 10 flasks. At the Axhandle mine, about 5 miles east of Ashwood in Jefferson County, a rotary furnace has been installed, and it is reported that the property will have production this year.

⁷ Geologic map of the Round Mountain Quadrangle, by W. D. Wilkinson, State Department of Geology and Mineral Industries, 1939.

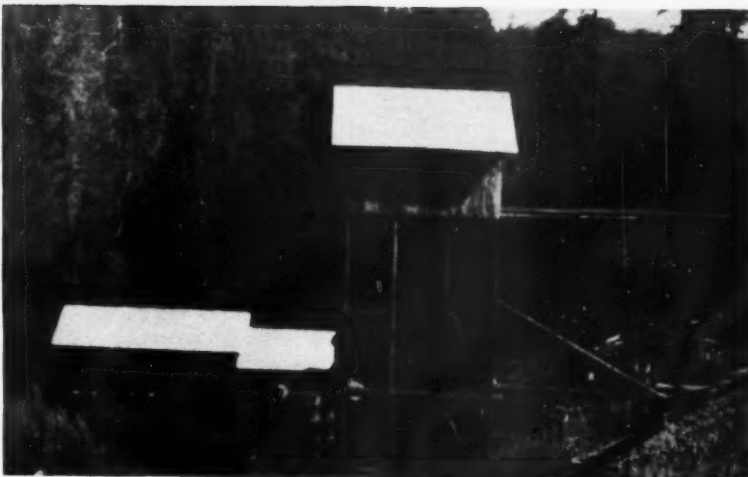
timber and mountainous topography. Several cinnabar deposits in this area have produced in the past, but for the most part are inactive at present. Those properties with most development work are as follows: Buena Vista, Maud S., Pollanz, Nivinson, Red Cloud, and Bonita. The Buena Vista and Red Cloud have rotary furnace plants. Only the Red Cloud is active.

Meadows Area

This locality is 8 to 14 miles north of Gold Hill, in Jackson County, in Evans Creek drainage. There are several cinnabar prospects, but the two best known properties are the War Eagle and the Chisholm.

War Eagle Mine.—This operation is in Secs. 8, 16 and 17, T. 34 S., R. 2 W., about 8 miles from the town of Beagle. The property has had a variegated history, due in part to the occurrence of arsenic in marcasite, accessory mineral in the deposit. At one place on the

(Continued on page 64)



Upper left. View of sinter dump looking west from Black Butte

Center. Crusher house and condensers at Buena Vista mine

Lower left. Scott furnace building at the Maud S mine

Recent Developments at the NEW PARK MINING CO.



The Mayflower, Park Galena and Star of Utah Tunnels are the main working adits on the property

THE Mayflower Unit of the New Park Mining Co. is located in the Snake Creek and Blue Ledge Mining Districts, more commonly called the "East Park City District," situated 40 miles southeast of Salt Lake City in Wasatch County, Utah. The nearest shipping point is Keetley, Utah, the terminus of a branch of the Union Pacific Railroad. Recent operations at the mine have aroused widespread interest because a large orebody has been encountered which occurs in quartz diorite porphyry, whereas the majority of the ore deposits in the Park City District are found in sedimentary rocks.

The Mayflower, Park Galena and Star of Utah Tunnels are the main working adits on the property. At the present time the production of the New Park Mining Co. comes from the orebody on the Mayflower Tunnel level. A right of way through the

● *Development Work in Driving Mayflower Tunnel Rewarded With Orebody Discovery—Lies in Porphyry While Majority in District in Sediments*

By CLARK L. WILSON
Resident Engineer and Geologist
New Park Mining Co.

Star of Utah Tunnel is leased to the United States Smelting Refining and Mining Co. and the Park City Utah Mining Co. Both of these companies are working in the sedimentary rocks and have prospected and mined some mineralized beddings.

History

The New Park Mining Co., a Nevada corporation, was organized in May, 1932. The principal business

office is located at Keetley, Utah. The company is a consolidation of the Star of Utah Mining Co., Mayflower Mines Corporation and the Park Galena Mining Co. The Park Galena Mining Co. was organized in 1926 and operated the old Glenco Mine. The workings of the Park Galena mine now consist of nine levels connected by two main shafts and several winzes. The vein has been prospected by approximately 9,000 ft. of drifting and cross-cutting.

The Mayflower Mines Corporation was organized in 1929 and drove the first 3,300 ft. of the Mayflower Tunnel. Since the organization of the New Park Mining Co. 5,800 ft. of drifting, cross-cutting and raising has been done from this tunnel, and the Park Galena fissure was intersected on December 15, 1939.

General Description of Mayflower

The portal of the Mayflower Tunnel is situated in Big Dutch Pete Hollow at an elevation of 6,444 ft. and is $1\frac{3}{4}$ miles south of Keetley. The tunnel was driven 6,620 ft. in the general direction S. 73° W. until the Park Galena fissure was intersected. The fissure has been developed on the tunnel level for 900 ft. and has been prospected vertically with nine raises spaced an average of 90 ft. horizontally. The back of the highest of these is now 200 ft. above the Mayflower Tunnel, which is the 800 level with respect to the Park Galena workings. Three other raises have reached the 700 level.

The mine plant, located at the tunnel portal, consists of a steel compressor building, blacksmith shop, motor battery room, saw shed, warehouse, change room, ore bin and two residences. The powder magazine is

has been necessary to replace much of this old timber, and the track has been realigned, using both wood and metal ties. The radius on several curves has been lengthened and the air line placed nearer the walls to give better track clearance.

The mine operates six days a week with three 7-hour shifts per day, allowing one hour between shifts to ventilate the workings.

The miners belong to the Park City Mine and Mill Workers Local 99 of the CIO and travel to work from their homes in Heber City and Park City. There is no boarding house at the mine. There has been no labor trouble, and operations continued during the statewide mine strike in 1936.

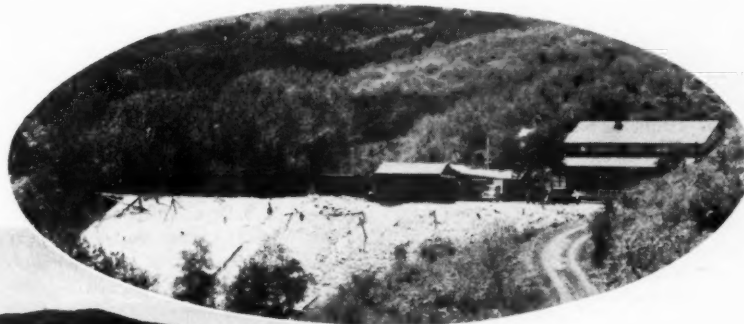
The total ore shipped from the Mayflower level for the period January 1, 1940, to August 1, 1940, was 21,572 wet tons, having a settlement value of \$12.94 per ton after deducting smelter, freight and assaying charges. The ma-

Geology

The general geology of the Park City District has been well discussed by J. M. Boutwell in U. S. Geological Survey Professional Paper 77 and also by B. S. Butler in Professional Paper 111, but a brief description of the geology of the New Park property will be included here.

The New Park mine is situated on the east flank of the Park City anticline located at the intersection of the Uinta Mountain uplift and the Wasatch Mountains. The trend of the anticline is slightly east of north, and the strike of the sedimentary rocks in the vicinity of the mine is generally northeast with a dip to the east.

The sedimentary formations present in the area are the Pennsylvanian Weber quartzite, approximately 1,500 ft. thick, and an older formation described as undifferentiated limestones which are in part within the Weber quartzite. The formation directly be-



Above. Portal of the Mayflower Tunnel in 1932. The Mayflower Mines Corporation drove the first 3,300 ft. of the tunnel after its organization in 1929



Left. Mine plant at Mayflower Tunnel portal now consists of compressor building, shops, warehouse, change room, ore bin and two residences

located several hundred feet from the mine plant.

The ore is trucked from the company ore bin to the loading tippie at Keetley. It is now proposed to extend the railroad from Keetley to the tunnel portal and is being considered by the Union Pacific Railroad.

A large part of the Mayflower Tunnel was timbered as it was driven because of heavy and blocky ground. It

jority of the producing mines in the Park City District have a lead-silver-zinc ore, but over 96 per cent of the metal values in the New Park ore are gold and silver.

The New Park property consists of approximately 1,600 acres of patented and unpatented claims. The company also has a mineral lease from the State of Utah on 600 acres of ground south of the Mayflower Tunnel.

low the Weber has locally been called the Wasatch limestone. Approximately 325 ft. below the Weber-Wasatch contact is a shale bed 25 ft. thick that has acted as a dam to ascending mineralizing solutions, and it is in this horizon that important bedded ore deposits have been mined by the Park City Utah Mining Co. working through the Star of Utah Tunnel. The greater part of the surface exposures in the area are quartz diorite porphyry.

The mine workings are enclosed in a structural block that is bounded on the north by the McHenry fault, on the south by the Cottonwood fault, to the east by andesite flows and to the west passes into the main anticline, but is affected by the quartz diorite intrusions.

Two major parallel northeast zones of fracturing traverse the Park City District. Each zone is composed of a series of fissures trending N. 60° to 70° E. and dipping both to the north and south. There is a similar zone in the vicinity of the New Park mine consisting of eight fissures, some of which branch from a stronger fissure, but in general trend N. 60° to 80° E. and have steep dips to the north and south. The Park Galena fissure is in the south central portion of this zone and has an average strike of N. 77° E. and dips 78° N. The vein, as exposed in the western portion of the Park Galena workings, is known to intersect the contact fissure which strikes N. 40° E., dips 77° N.W. and on the upper levels is a true contact between the diorite and Weber quartzite; on the lower levels it is within the quartz diorite and is ore bearing. At the present time the heading in the Mayflower Tunnel is within 100 ft. of the contact fissure and an orebody is expected to be encountered at the intersection of the two fissures.

Both the Park Galena fissure and the orebody in it are in quartz diorite porphyry. Surface outcrops indicate that the fissure continues to the west into the sedimentary rocks and it is possible that important bedded ore deposits may be found in the favorable horizons in the Wasatch limestone.

The Pearl fissure, 400 ft. north of the Park Galena, strikes northeast, dips steeply to the north and the geological occurrence is similar to that of the Park Galena fissure. The fissure was intersected during the driving of the Mayflower Tunnel and will be prospected from this level. Some ore was extracted from the fissure near the surface.

The Ore Minerals

On the basis of physical characteristics the New Park ore is divided into two classes. The first 400 ft. of ore in the eastern end of the Mayflower is a fine, granular mixture of sulphides and quartz enclosed by soft, altered quartz diorite walls. The granular nature of the ore is at least partially due to movement in the vein following mineralization.

The ore in the western end of the level occurs as a hard, compact, banded

vein of quartz and sulphides enclosed in hard, firm walls. The banded nature of the vein is evidence of several different periods of mineralization—namely, (1) quartz-pyrite mineralization that is commonly present on both hanging and footwall; (2) chalcopryrite-quartz mineralization, and (3) a galena-sphalerite mineralization that is usually in the central portion of the vein.

The ore minerals are pyrite, chalcopryrite, tetrahedrite, galena, sphalerite and hematite. Gangue minerals are quartz and occasionally some rhodonite. The hematite occurs with the pyrite and chalcopryrite, and the galena and sphalerite are generally separated from the other minerals.

In the eastern part of the orebody there is a direct ratio between the values of gold, silver, copper, iron and sulphur, indicating that the gold-silver mineralization is associated with chalcopryrite, tetrahedrite and pyrite. The lead and zinc values are in direct ratio. In the western end of the orebody the ratio of gold, copper and iron are similar, but the gold value varies more with the lead and zinc values, which are proportional and are of a better grade than to the east.

Operating Plan

The mine operation and office management is under the direct supervision of Mr. W. H. H. Cranmer, president and general manager of the company, who resides at the mine. Mr. F. M. Rivers is superintendent and has a staff including a foreman, three shift bosses and a yard boss. A total of 110 men are now employed at the mine. The company has its own engineering department and also employs a consulting geologist and engineer.

Mining Methods

The ore from the Park Galena fissure on the Mayflower level has been extracted by an overhand stoping method. Two systems of mining are used. The first was initiated at the time mining was started on this level and consists of timbering the open stopes with stringer-stull sets. The stringers or caps, which are 8x8 in. Oregon fir, are spaced 5 ft. horizontally by 4x6 in. collar braces and the set is 7 ft. high. The caps vary in length from 5 to 15 ft., depending on the width of the stope, and are placed at right angles to the strike of the fissure. The posts are native round timber set on approximately 5 ft. centers. Chutes are placed every other set on the tunnel level and all the ore can

be drawn as it is broken, since the stope is well supported by the stringer sets. This method gives the miner a good footing to work from, and the waste areas in the vein can be blocked and held in place.

Due to the loose, blocky nature of the vein walls in some portions of the mine, a timbered stope is necessary, but the other type of mining used, shrinkage stoping, has been found practical where the vein walls are strong and firm. In accordance with this system three compartment raises are driven on 100-ft. centers, between levels paced 100 ft. apart. Fifteen ft. vertically from the sill of the raise a drift is driven to connect both raises, leaving a 15-ft. pillar of ore to protect the main haulage level. In each 100-ft. section, five chutes are cut through the pillar on 18-ft. centers to provide a means of drawing the ore. The shrinkage stope mining is carried on above the pillar, and the raises are kept 10 to 20 ft. ahead of the top of the stope.

Several factors make this mining method applicable to portions of the mine. The ore is strong enough to stand while being mined, and the vein is not so wide that the back needs to be supported. No trouble is experienced in drawing the ore, as the vein is nearly vertical. Any large boulders are broken on the muck pile and waste is sorted on the grizzly in the outside ore bin. After a 100-ft. section has been mined and the ore drawn, a 2x12 in. lagging floor will be placed over the ore pillar above the haulage level and the stope will be filled with waste. When the haulage level along the vein is abandoned, the ore pillars will be mined as the work retreats to the main haulage adit.

Transportation

Transportation facilities have been planned to adequately handle future increases in ore and waste tonnages. Two Mancha battery locomotives are now in use. The smaller one, a "Little Manch Trammer," is used to pull the man train to and from work, to switch cars and make up trains in the mine. The "Titan A" motor hauls the loaded trains to the outside ore bin and returns with empties. The company now has 60 new and 37 reconditioned 20 cu. ft. mine cars. Twenty-pound rail on 24-in. gauge is used throughout the mine.

Ventilation

The mine is ventilated by means of four 5-hp. Coppus blowers connected in series on a 24 gauge galvanized iron pipe, 11 in. in diameter and made in

sections 8 ft. long. The pipe has a crimped joint that is wrapped with flannel and painted to prevent air leakage. The fans exhaust the used air and smoke fumes through the pipe, and the fresh air is drawn into the mine through the main tunnel. Compressed air jets have been successfully used to distribute the fresh air to the various working places.

A 300-ft. raise is being driven from the Mayflower level to the 550 level in the Park Galena workings. This will provide adequate ventilation for all the mine workings except those to the west of the ventilation raise.

Power Supply

The mine is supplied with an 11,000 volt primary power circuit by the Utah Power and Light Co. This is stepped down to 440 volts for use at the mine plant. A 440-volt line is used in the mine for the fans, but is transformed to 220 volts for electric blasting.

Machines

The mine is well equipped with drilling machines, including drifters, stopers and sinkers. Timken rock bits are now being used to drive raises. The drill rods have an 18-in. change, and the gauge of the four bits necessary for a complete change varies from 2 1/8 in. to a minimum of 1 3/4 in.

Two Ingersoll Rand compressors are installed at the Mayflower Tunnel, the largest delivering 650 and the other 450 cu. ft. of air per minute.

A Sullivan Class HL1 mine car loader was used during the driving of the last portion of the Mayflower Tunnel and is now used in drifts and cross-cuts on the main tunnel level.

Prospecting

The New Park Mining Co. has two other operations in progress on its property, aside from the work in the Mayflower Tunnel. Charles Moore, president of the Flagstaff Bonanza Mining Co., has a lease on 35 acres of ground located at the western end of the property. Some of the first production in the Park City District was from the Flagstaff vein which strikes N. 51° E. and dips 75° N.W. The surface exposure of this vein is characterized by a manganese-iron stained quartz breccia, and the vein is being prospected by a shaft and several hundred feet of drifts.

The Gold Queen is another property that has recently been opened up. It is located south of the Flagstaff and



A New Park prospect—the portal of the Gold Queen mine

three miles west of the Mayflower Tunnel. The Gold Queen or Superior fissure strikes N. 65° W. and dips 80° S. and is exposed in a surface cut above the Gold Queen Tunnel. The limonite-copper stained gossan is 15 ft. wide and contains 0.29 of an ounce of gold and an ounce of silver. The tunnel workings have reached the fissure, but additional work is necessary to determine the width and extent at this

level. The Wildflower fissure and the Cottonwood fault fissure, both parallel to and north of the Superior fissure, will be prospected by the Gold Queen Tunnel.

The work that has been done by the New Park Mining Co. proves that the mine now has a splendid orebody and that there are a number of good prospects that warrant investigation and development.

Stoker Sales Register Sharp Increase

The Bureau of Census of the Department of Commerce reports that factory sales of mechanical stokers in July, 1940, amounted to 16,834 as compared with 9,986 for June, 1940, and with 9,614 for July, 1939. For the first seven months of 1940 sales totaled 54,230 as compared with 36,604 units sold in the same period in 1939.

Illinois to Hold Mineral Industries Conference

The Illinois Geological Survey of the State Department of Registration and Education, the Engineering Experiment Station of the University of Illinois, and the Illinois Mineral Industries Committee will hold a mineral industries conference and will dedicate the new Natural Resources Building, at the University of Illinois in Urbana-Champaign, on Thursday and Friday, November 14 and 15.

Completion of the Natural Resources Building, on the campus of the University of Illinois, promises to begin a new chapter in the development of the State. This fine, large structure, equipped with the most up-to-date facilities for research, with complete offices and laboratories, will make it possible to pursue research investigations of the natural resources of Illi-

nois that, although planned, until now have had to be postponed for want of adequate facilities.

The Mineral Industries Conference will begin with an open-house gathering on Thursday morning that will afford a splendid opportunity for complete inspection of the new offices and laboratories of the Geological Survey. At noon there will be an all-mineral-industries luncheon followed in the afternoon by concurrent separate sessions on coal, oil and gas, clay and clay products, rock and rock products, and a symposium on the geology of the Devonian System conducted jointly with the Department of Geology of the University of Illinois.

Thursday evening will be given over to a general mineral industries banquet.

The dedication ceremonies of the Natural Resources Building will take place on Friday afternoon under the auspices of the Board of Natural Resources and Conservation and the University Board of Trustees. Dr. Isaiah Bowman, noted scientist, lecturer, and educator, and president of the Johns Hopkins University, will give the dedication address.

The Southern Wyoming Coal Operators Association meeting at Salt Lake City elected the following officers for a one-year term: President, T. J. O'Brien; vice president, W. J. Thompson; treasurer, L. W. Mitchell.

MODERN COAL PREPARATION

At PINCKNEYVILLE



General view of preparation plant of the Pyramid Coal Corporation at Pinckneyville, Ill., showing at left, Link-Belt Rotary Dump, with railroad cars in readiness for dumping. Immediately under this rotary dump is a 500-ton concrete hopper, lined with steel, extending to a depth of approximately 50 ft. below the surface. Gravity sludge disposal trough is shown at right, leading from cone to spoil banks. To the right of rotary dump is a narrow gauge locomotive, with a trip of empties from which the coal has just been dumped into the 500-ton hopper; and leading from the hopper is the belt conveyor runway to the main plant

THE Pyramid Coal Corporation at Pinckneyville, Ill., installed an ultra-modern preparation plant, which was put in operation in the fall of 1939. This plant was put in for the purpose of preparing the entire product of two of their mines in that community, as well as other coal which they might purchase and prepare when conditions justified. It was also to be used for the purpose of servicing coal for other operators on a fee basis, where market conditions might call for a preparation they were not equipped to supply.

Dual Dumping System

To the end that coal could be handled direct from the pit to the plant, or from railroad cars, a 500-ton reinforced concrete hopper was installed, lined with steel. A dual dumping arrangement consists of (1) a narrow gauge track running along one side of the dumping hopper over which coal is hauled from the pit in narrow gauge side-dump cars and dumped directly into the hopper, and (2) a Link-belt Rotary Dump over the other side of the hopper, where railroad cars may be dumped at a rate that will furnish the preparation plant with its capacity tonnage when the pit is idle. When the pit is working, sufficient railroad cars may be dumped to maintain plant capacity and a steady or pre-determined flow of coal at all times.

At the bottom of this hopper is a variable speed feeder delivering the

● Ultra Modern Plant of Pyramid Coal Corporation Completes Successful First Year of Operation, Featuring Dual Dumping System, Wash Boxes, and Two Independent Water Circulating Systems.

By B. H. SCHULL

Vice President in Charge of Operations
Binkley Coal Company

coal into a large adjustable double-roll breaker, the adjustment ranging from 7 in. to 18 in. After passage through this breaker, the coal is deposited by feeder onto a conveyor belt for travel to the preparation plant. The variable speed feeder above referred to has a remote control and remote indicator, which give the operator of the preparation plant a positive control of the input rate to the preparation plant, instantly variable over a wide range of tonnages, enabling him to adjust the feed rate to meet varying conditions that might be brought about by variations in the raw product, or particularly exacting demands for finished product. All units of the plant appear to be able to receive the sudden and wide variations in the feed range, including considerable overload, without noticeable change in preparation efficiency.

Three Main Functions of Initial Screening

The coal, when delivered to the preparation plant by conveyor belt, is first discharged onto a dry coal shaker screen, which has three major functions as follows:

(1) To separate all of the raw screenings from the balance of the coal, and deliver all or any portion of them into railroad cars without washing, to a wash box for washing screenings, or to a conveyor where they may be delivered raw to the mixing conveyor for re-assembling with the larger grades which have been washed. This latter process would give a mine-run coal, except for washing instead of hand picking the larger sizes.

(2) To carry lump over the top deck for loading as lump when

desired. After the lump passes over the top deck of this shaker, it is discharged to shaking picking tables where it is hand picked, the foreign matter being thrown to discharge chutes for delivery to refuse belt traveling to a refuse bin. Coal with laminated impurities is picked from this table and thrown into other chutes leading to the lump middlings crusher located immediately under the table, where middlings are broken down in size and returned to main belt conveyor from hopper to plant, and re-circulated. The cleaned lump is delivered from the end of the picking table by a lowering conveyor onto a boom, thence to cars. When lump coal is not desired, the breaker in hopper is set at 7 in., and any oversize coal not going to the egg, is diverted by door to the lump middlings crusher and broken down for re-circulation.

(3) The third purpose of this dry coal shaker is to divide or separate the coal for delivery into three Norton Automatic wash boxes. The first box is for washing 1¼-in. minus; the second for 4-in. by 1¼-in. and the third for 7-in. by 4-in. coal.

Operation of Wash Boxes

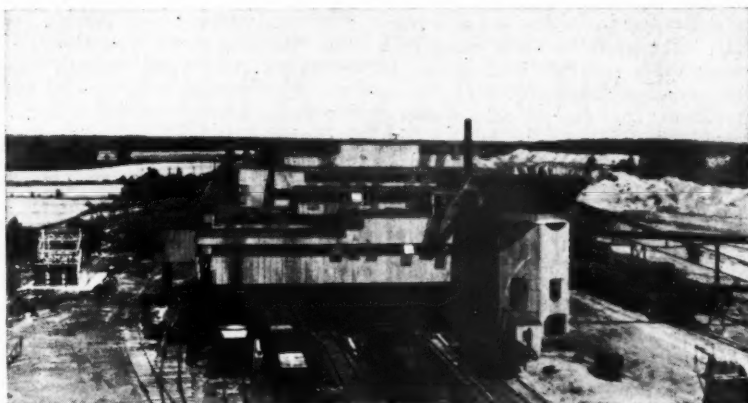
Each wash box may be adjusted for washing to any ash content desired. They have reject or refuse elevators on both the primary and secondary

ends. Strictly foreign substances of heavier specific gravity than coal are removed at the primary end, and the secondary end removes sufficient laminated pieces to give the desired ash content. Both primary and secondary ends of the 1¼-in. wash box deliver the rejects to a belt conveyor traveling to refuse bin.

The coal passes out of the box into a laundry, where it travels with the overflow water to a fine coal classifier and is screened to 1¼-in. by ¾-in., ¾-in. by ⅜-in., and ⅜-in. by 0-in. coal. First size mentioned may be delivered to bottom run of mixing conveyor for conversion into stoker coal; the first two sizes above mentioned may be delivered to mixing conveyor,

or on boom for direct loading to cars. The ⅜-in. by 0-in. coal passes completely through this fine coal classifier into another laundry, which delivers it to de-watering screens where the water and ½ mm. minus is removed, and the ⅜-in. by ½-mm. coal passing over the de-watering screens feeds into a drag conveyor, which will deliver all or any percentage of this coal to the mixing conveyor, and the balance to cars.

The water and the ½ mm. minus, after going through the de-watering screens, passes by gravity to a steel sump located on the ground floor, whence it is elevated by pump to a settling cone, slightly higher than the preparation plant. This cone is pro-



View from the empty side of plant, showing gravity sludge disposal trough at right, leading from cone to spoil banks



Interior view, showing all of the nut, and a portion of the egg Norton Automatic Wash Boxes. At the right may be seen the secondary conveyor to nut wash box, refuse from which is crushed and recirculated for salvage of coal. Water has been drained from boxes to show the coal in its actual travel through the box prior to its passage with water to laundry at right, thence to coarse coal classifier

vided with a flume around the top edge. The sludge settles to the bottom of the cone, which is sufficiently high for gravity disposal by trough, without pumping. The partly clarified water passing over the flume is re-used, and returns by gravity to the fine coal wash box, completing this water circuit. This settling process provides the higher degree of clarification, necessary for the fine coal washing, than would be the case with a straight re-circulation without allowing time for settling.

Rejects from coal going to the nut and egg wash boxes are removed in the primary end and delivered to a refuse belt, intersecting with the refuse belt from the fine coal box. Rejects from the secondary end of these two boxes are discharged onto a belt that conveys them to a middlings crusher, breaking the material down to 1¼-in. in size. From this point the middlings are conveyed to the main conveyor belt traveling from hopper to preparation plant, and are again re-circulated as

in the case with the pickings from the lump table.

Sizing Operation

After passing through these two wash boxes the coal is delivered by laundry onto a coarse coal classifier for sizing, and any sized grade may be discharged either (1) to the mixing conveyor or the boom, as desired; or (2) to bottom run of mixing conveyor for conversion into stoker coal. There is a laundry under the coarse coal classifier and 1¼-in. screen plates on the bottom deck of the shaker, where any degradation and minus 1¼-in. coal is removed and gravitated to a drag type settling tank, through which travels a very slowly moving drag conveyor. The product is returned to the head of the fine coal classifier for final sizing and de-watering. The water from the coarse coal wash boxes and classifying screen is returned from a sump within the drag tank to the coarse coal washers, equipped with hydraulic relief valves for regulation of operating pressure.

There are two complete and independent water circulating systems. By means of these the total volume of water passing over the de-watering screens is greatly reduced, and a more

favorable coal and water ratio is provided than would exist if the wash water of the entire plant had to pass over the de-watering screens. If the entire volume of water were to pass over de-watering screens, it would require double the de-watering screens now in use. The splitting of this water system makes it possible to locate the sump pump for the coarse coal washers above the track clearance, materially reducing the head. Savings in power consumption are thus effected.

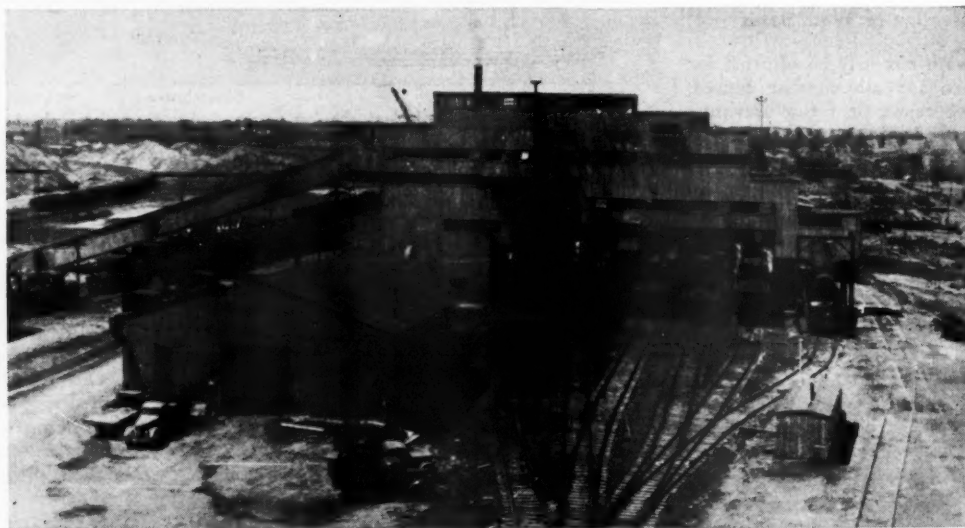
The top run of the mixing conveyor is used in the mixing and blending of the sizes, as may be desired. The bottom run is arranged so that any of the sizes over ¾-in. may be turned into it and carried to a primary stoker coal crusher which delivers onto a vibrating screen. Coal passing over this vibrating screen goes through a secondary stoker coal crusher, after which it intersects with the coal having passed through the vibrator, and is conveyed by bucket elevator to another and larger vibrating screen located at the head of the fine coal classifying screens. This vibrator is a three-deck screen, and any or all of the grades from here may be delivered by chute directly to the respective

loading booms, to the mixing conveyor, or to the fine coal classifier as desired.

At the discharge of all chutes from the classifiers are degradation screens which discharge into a degradation collecting conveyor, returning the degradation to the secondary stoker crusher for re-sizing. There is also installed at all discharge chutes from classifiers, as well as at all by-passing-chute discharges, automatic coal spraying equipment for oil treatment of the coal. A vibrating calcium chloride feeder is used over the mixing conveyor. This feeder may be set to automatically feed any number of pounds of calcium per ton of coal that may be desired.

Size Consist Closely Regulated

Chemists are constantly at work checking ash content of the loading to detect and correct irregularities if and when they develop. Although ash is one of the main considerations, recent experience also shows coal consist to be equally important, and a system has also been set up to check, control and record the consist, in order that a reasonable degree of uniformity may be maintained at all times. This work is also handled by our chemists.



View showing load side of plant. There are seven loading tracks, six of which are equipped with loading booms

U. S. Manganese Supply Adequate

Supplies of manganese on hand or readily available to the United States are now estimated as adequate for more than two years' requirements and tin stocks are estimated as equivalent to more than one year's supply, according to an announcement by E. R. Stettinius, Jr., in charge of the

Industrial materials Division of the National Defense Advisory Commission. In both cases these estimates, which naturally take into account unusually heavy demands which will result from the national defense program, include stocks currently held by industry and the amounts already received or afloat to the United States

under the government stock pile program. In the case of manganese the quantity available from near-by Cuba has been taken into account as well as an anticipated increase in domestic production and the substitution of low-grade domestic ores for high-grade imported ores in certain industrial uses.



Convention visitors gathered in the Broadmoor Hotel to receive cordial welcome to Colorado at the opening luncheon

COLORADO SPRINGS MEETING

an Outstanding Success

ADVANCE predictions of a "smash hit" at the Seventh Annual Metal Mining Convention and Exposition of the Western Division staged in Colorado Springs, Colo., September 16-19, were more than fulfilled as nearly 2,000 mining men, manufacturers and ladies took over the city for a week of business and pleasure. Meeting at a time when world conditions were at a crucial stage, the convention offered striking evidence of the importance mining men now attach to these annual gatherings where the industry's problems are thoroughly discussed and analyzed, equipment exhibits studied, and acquaintances renewed under ideal conditions. The warm hospitality of Colorado Springs was praised by delegates, manufacturers and visitors alike, who termed the meeting one of the most highly successful ever held.

This year's program, arranged under the direction of a committee headed by J. C. Kinnear, general manager, Nevada Mines, Nevada Consolidated Copper Corporation, was of exceedingly high calibre, assembling an array of unusual talent for the nine sessions comprising the four-day program.

Sharing the spotlight with the convention sessions was the complete ex-

• Delegates to 7th Annual Metal Mining Convention and Exposition Voice High Praise of Program, Exhibits, and Entertainment

position of mine and mill equipment and supplies assembled in the exhibit hall of the Broadmoor Hotel, where the acclaim of both operators and manufacturers attested to the success of the display. Although the total registration of 1,745 was slightly below that of last year, exhibitors agreed that they had never before contacted a more representative and widespread group of practical mining men, nor one which took better advantage of the opportunity to inspect the displays and talk over equipment problems. Operating men came from all of the western mining states, from the Tri-State area, the Lake Superior region, and many eastern points.

Convention delegates, on leaving Colorado Springs, were enthusiastic over the entire convention arrangements, and most appreciative of the work of local committees in providing them with a sparkling entertainment calendar. All those contributing to the success of the undertaking are to be

highly commended and warmly thanked for their efforts. Special recognition is due to Merrill E. Shoup, chairman of the Western Division, who gave generously of his time and efforts to the general arrangements and the work of the local and state finance committees; to Howard I. Young, President of the American Mining Congress; Russell D. Law, chairman of the entertainment and general committees; Mrs. A. C. Magruder, chairman of the ladies' executive entertainment committee; Mrs. A. E. Carlton, chairman of the ladies' committee; George H. Rupp, chairman of the trips committee; William I. Howbert, chairman of the reception committee; George Keener, chairman of the housing committee; Ernest Nowels, chairman of the publicity committee; J. A. Knight, chairman of the transportation committee; and to Robert S. Palmer, secretary of the Colorado Mining Association. Sharing honors with this group are the hun-

dreds of committee members who worked untiringly prior to the convention and throughout the week to assure its success.

THE PROGRAM

Convention sessions were opened at 10:15 Monday morning, September 16, by Julian D. Conover, Secretary of the American Mining Congress, who cited the critical world conditions existing today and declared that "The metals that we produce are basic—they are absolutely essential—not only for the production of armaments but for every one of the thousands of manufacturing plants and processes which must be called upon in our defense program.

"Consequently, this year of all years," he said, "it is extremely important that the men of the mining industry—the men who have the responsibility for producing these metals—should come together to consider how, as patriotic American citizens, we can best serve this country of ours in its present crisis. We must consider what the demands for our products are likely to be, and how we can meet them most efficiently; and in doing so must bear in mind that if the mining industry is to do its part in this emergency, it must not be subjected to an interminable number of burdensome and unnecessary laws and discriminatory taxes. Our legislative representatives and the public must realize that an industry which has the speculative hazards of mining must be given a reasonable opportunity to exercise the spirit of initiative and enterprise that has characterized it in the past—that same spirit that built the West and that we need today more than ever before."

Mr. Conover praised the cooperation of the manufacturers of mining equipment in the industry's efforts to meet production problems.

There were nine convention sessions, each presided over by mining men of experience in the subjects discussed. George H. Rupp, manager, Mining Department, Colorado Fuel and Iron Corporation, presided over Monday morning's session on "Health and

Safety." Howard I. Young, president of the American Zinc, Lead and Smelting Company, chairmanned the Monday afternoon session on "Minerals in the Present Emergency."

Tuesday's chairmen included, at the morning session on general subjects, P. G. Beckett, vice president, Phelps-Dodge Corporation; at the afternoon session on "Geology and Mining," Russell B. Paul, resident mining engineer, The New Jersey Zinc Company, and at the other afternoon session on "Mining, Placer and Gold Recovery," Ross D. Leisk, general manager, Sunshine Mining Company. On Wednesday the chairman of the morning session on "Taxation" was Donald A. Callahan, well-known Idaho mining man, and the afternoon session on "Wage-

Hour—Mining Loans—Carlton Tunnel" was presided over by J. J. Carrigan, general manager, Anaconda Copper Mining Company. Thursday's

chairmen were Stanley A. Easton, president, Bunker Hill and Sullivan Mining and Concentrating Company, and H. E. Treichler, general manager, Texas Gulf Sulphur Company, who presided over sessions devoted, respectively,

to "Labor Problems," and "Prospects for the Metals."

HEALTH AND SAFETY

The Monday morning convention session was given over to questions of health and safety. Andrew Fletcher, vice president and treasurer of St. Joseph Lead Company, speaking on "Sick Absenteeism," stated that losses because of sick absenteeism are a big factor in the mining industry.

He estimated that the annual dollar loss to the lead and zinc mining industries due to sick absenteeism approximates more than \$1,250,000 in

lost wages and \$3,000,000 in lost production. He pointed out that his company had made a study of sick absenteeism and that they had found that "reduction of lost time from illness presents many more problems than reduction of lost time from accidents, as in addition to working conditions and employee attitude, sick absenteeism is affected by the employee's home life, his housing, his food, his ability to get prompt and efficient medical service, and above all, the general sanitary conditions in the locality in which he lives."

Mr. Fletcher emphasized, however, that his company does not have facts upon which to base conclusions as to why so much more time is lost because of sickness than due to accidents, and that inquiries made of other mining companies did not secure adequate information thereon. He suggested that in order to obtain data necessary to the taking of constructive and corrective steps the industry adopt the following procedure:

"1. Each mining company, who is interested in lessening losses due to sickness, should place the responsibility with some department or individual to collect information on absenteeism.

"In this connection the forms for listing information recently issued by the Air Hygiene Foundation are entirely suitable and are based with the thought of aiding the U. S. Public Health Service in their study of conditions throughout the United States.

"If merely this so-called 'reporting' step is taken, I am sure that immediate and sizeable benefits will be obtained and the lessening of shifts lost, provided the initial approach is tactfully made, and employees do not feel that the company is encroaching on their personal liberties and family life—it must be expected that until the sincerity of the company's investigation is appreciated and until employees thoroughly understand why the study is being made, certain individuals will report an afternoon spent at a ball game as a day in bed with a cold, or even use the old schoolboy excuse of attendance at a grandmother's funeral.

"2. When the information has been collected over a period sufficiently long to eliminate exceptional conditions, then the comparative data should be carefully studied. I am assured by the Air Hygiene Foundation that they would welcome the opportunity to examine any records submitted by a mining company. The information would be considered as confidential, if desired, and only the total figures would be included in their study of sick absenteeism throughout the United States.

"The mining industry has quickly and economically handled problems of production, sales and financing, and there is



Julian D. Conover opens convention



Geo. H. Rupp, Chairman of the Session on Health and Safety



Andrew Fletcher

no doubt but that we can obtain similarly satisfactory results in improved employee health provided we have 'facts' to work on. With 12 times as many shifts lost through absenteeism as in accidents, the opportunity is very great to obtain large dollar earnings—I use the word 'earnings' as the old saying is still true, 'a dollar saved is a dollar earned'."

Stanly A. Easton, president, Bunker Hill and Sullivan Mining and Concentrating Company, in describing what his company had done to cut down sick absenteeism, outlined the use of the ultra-violet ray solarium.

He said that his company had built such a solarium to provide sunshine treatments especially for the underground men at the company's operations since some of them do not see the sunlight for months at a time. The solarium consists of a cabinet in which is installed an escalator that can be operated at various speeds, but is generally set so that about a minute is consumed in traveling through the cabinet. The electric equipment necessary for its operation consists of six 110-volt quartz mercury vapor lamps, arranged to give uniform radiation.

"This solarium," said Mr. Easton, "is an annex to the change house at the mine. It is connected by two doors. The underground men take off their digging clothes, take a shower, and ride through the solarium, when their shift comes off. There might be five or six at a time in the cabinet.

"As one rides through, another takes his place, so there is no delay. It only takes a few minutes additional time.

"Every morning the solarium is closed off from the change house, the matron is placed in charge and the families, the women and girls and the people of the community—and the public school students—are given access and treatment through the solarium, gratis.

"Some three years ago, several hundred employees at the lead smelter and the electrolytic zinc plant petitioned for a solarium to be installed that would be more accessible and convenient for them, so we built another solarium at the change house at the smelter and refinery."

Mr. Easton pointed out that results of the solarium's operation in the case of the workmen have been definite and certain, but that it is impossible to express them statistically. He said that operation of the solarium had proven especially successful in reducing colds and "flu."

Progress in mine safety was the second topic of the session and was described in a joint paper by G. J. Barrett and D. F. Donovan of the Oliver

Iron Mining Company, which was presented by Mr. Donovan. The authors pointed out that "mining in the Lake Superior district have not only kept pace with the progress of the industry generally, but actually has led it in installing everything worth while and practicable to make more safe and less hazardous the work of its employees."

They told convention delegates that the accident frequency rate in the iron mining industry of Minnesota was 26 percent less than the all-industry rate during the year 1938. They lauded the National Safety Council and the United States Bureau of Mines for the work carried on by them in the interest of safety, stating that they have come to rely upon this work.

As factors of primary importance in relation to safety, they cited the physical well-being of the workmen, mental health and poise, the welfare of the miner's family, and the opportunity for education.

One of the main essentials is safety planning, they said, and pointed out:

"The slogan, 'Safety First,' is but an outpost of accident prevention. The initial work in safety begins in some highly skilled engineering department and takes form in designs emanating from the drafting room. With well thought-out ideas reduced to blueprints, the safety expert that begins to visualize practical equipment that will augment the safety movement. The most practical equipment is sought and if a better type is produced outside the industry, it will be obtained and installed, thereby making more secure the physical well-being of the artisan employed in the mining industry. One of the first requirements, however, is that equipment manufactured outside the industry must conform to its standard safety codes, thus providing against the possibility of either man or machine failure and thereby promoting the safety of the employee.

"Equipment of employees engaged in mining has kept step with safety progress. The industry has not been slow to adopt ideas developed and proved worthwhile in other fields. The hard hat and goggles are examples of the adaptability of many such things to mining.

"Ideas of new and improved equipment for use by miners had to be proved worthwhile before the workmen would use them. Miners prove as temperamental as prima donnas oftentimes when it comes to convincing them of the usefulness of such innovations. The hard hat, for instance, was perhaps first suggested by the type of bowler hats in vogue during the Gay 90's. Underground miners were long familiar with the hazard of material dropping from the back and striking them on the head. Canvas and cotton were poor protection against such a risk. Individuals were found taking their old cast-off derbies and covering the outside with pitch or similar material that would tend



G. J. Barrett



Dennis F. Donovan

to become hard and add strength to the 'tar-paper' top. This was long prior to the introduction of the tin hats in the first World War. In the early 1920's hard hats, made of reinforced, non-metallic material, were appearing here and there in the industry. In recommending their use, it was emphasized that they not only protected from impact, but that they were also non-conductors of electricity and acid resistant. If the brim of the hard hat was found to be in the way when the miner was carrying something on his shoulder he would be inclined to cast the hat aside for something he considered more convenient. Today, the miner is not only completely sold on the effectiveness of the hard-hat idea but it is compulsory that such hats be worn by all employees and visitors underground."

Discussing this subject, H. A. Walker, assistant general manager, Homestake Mining Company, emphasized that progress in mine safety and acci-

dent prevention may be attained through mechanical betterments and through careful personnel training.

He listed mechanical safety betterments as "(a) Good housekeeping, (b) design and installation of safety barriers as far as possible for all dangerous mechanical and physical points of danger, (c) care in the design of original equipment, (d) safety clothes and equipment, such as hats, goggles, gloves, hard-toed shoes, respirators, and electric lamps, (e) proper location of mechanical equipment from the standpoint of headroom, clearance, lighting, ventilation, and unnecessary noises, and (f) development of special safety devices, such as radio shaft signalling, etc."

"Notwithstanding the importance of mechanical innovations, the thorough training of personnel in safety and accident prevention," he said, "is of first moment.

"Personnel training includes (1) safety talks; (2) direct contact with men on safety matters; (3) advertising of safety through bulletins, signs, special slogans, etc.; (4) especial care in the training of a new workman; (5) safety inspections, both by workmen's committees and the supervisory force.

"It is a much-argued question whether safety bonuses aid in accident reduction. The writer believes that safety trophies, such as fobs, buttons, or some other appropriate safety emblem, have a more lasting value than money payments for non-accidents. In safety inspections a check list for the use of foremen, shift bosses, and the safety committee is of great aid.

"Such a list for a mechanical department would include some of the following typical items: (1) Are the men safety-minded, are they willing to cooperate with each other in maintaining a safe plan? (2) Is good housekeeping a gen-

eral practice, are aisles clear of stumbling blocks, debris, grease and oil? (3) Is stock piled neatly and safely? (4) Are there any exposed live wires, broken sockets, plugs or switches which employees must contend with? (5) Is machinery in good working order, are the small tools, chains and ropes in good condition? (6) Do all workmen wear goggles when necessary? (7) Do all workmen wear safety shoes, are other safety garments worn when necessary? (8) Is there an absence of ragged shirt sleeves, trouser legs, or other loose articles of clothing which might be caught in a gear, belt, or pulley? (9) Are the men encouraged to get first-aid treatment for minor injuries? (10) Do the men observe fundamental safety precautions in regard to lifting heavy objects off the floor, pulling on wrenches, striking a chisel? (11) Are there any low doorways or lack of headroom? (12) Are safe tools and ladders provided? (13) Are the plants properly ventilated and lighted? (14) Is the area free from grease and oil where oxygen-acetylene welding is done? (15) In electric welding, is the insulation on the extension cord in good condition, are screens used to protect near-by workmen? (16) Are machines wiped or oiled while in motion? (17) Is there a relief operator or engineer available? (18) Are there any fire rules, and are they understood by every employee? (19) Are there sufficient fire extinguishers and hoses, and does everyone know where they are located? (20) Does everyone know where the fire alarms are located? This questionnaire should then be followed by a space for remarks and recommendations. The questionnaire is not all-inclusive, but is merely employed as a guide to assure the covering of the major points in question."

Mr. Walker stressed the importance of accident records and the obligation of management "to spur on its organization to new advances in the technique of safety."

Dust conditions are grossly distorted by Communist-inspired propaganda, Evan Just, secretary of the Tri-State Zinc and Lead Ore Producers Association, said in speaking of the activities of certain agencies which recently published many inflammatory statements concerning the Tri-State area.



Evan Just

He pointed out that this district could probably be called the cradle of silicosis research in this country. Measures were adopted early in this area to prevent dustiness, he stated. He said underground concentrations had been kept to a minimum by wet drilling and adequate ventilation, and added that a recent medical survey of hundreds of people living in this area had failed to disclose a single case of silicosis due to exposure on the surface.

Describing the propaganda which distorted conditions in the district, he said:

"The build-up about us was begun by a Russian Communist Party organizer with headquarters in Kansas City, who frequently favored our district with his attentions. Later, a New York lawyer, Gifford Cochran, who is an officer of the 'National Committee for People's Rights,' visited our area and wrote up a lurid tract describing our area as a 'death trap.' Cochran induced the National Committee for People's Rights to undertake a publicity campaign. For this purpose they incorporated the 'Tri-State Committee' to create an uproar and to collect money from the gullible. One can judge for himself as to the motives of this propaganda organization by the fact that they have not done a solitary constructive act toward bettering the object of their attentions, although they have spent the thousands necessary for a superficially imposing 'expert study,' described in an extensive report which was given nationwide circulation, for a cleverly mendacious propaganda film, and for efforts which have enlisted the sympathy of various notables, unionists, and college groups.

"Another incident in this chain of episodes was the publication of a book purporting to be a personal account of life in our district as portrayed by a school teacher who lived in the area for many years. The latter fact was definitely true, and the drivel contained in the book is only explicable on the basis of its having been recast to catch the same wave of popular appeal stirred by 'The Grapes of Wrath.'

"Something of a climax was added to this affair when some advisers of Secretary of Labor Frances Perkins induced her to call a conference in Joplin on the subject of health, housing, and working conditions in the Tri-State area. Again we became the subject of front-page news. Miss Perkins proved to be a charming person of unquestionable good will, and we do not deem her personally responsible for the circumstance that these parlor-pink propagandists were furnished an additional springboard for the dissemination of their poison, nor for the fact that a union representing only a small portion of our miners was treated as a mouthpiece for labor, while the bulk of our labor, which is unorganized, had no representation. We did our utmost to acquaint Secretary Perkins with our actual conditions. From a practical standpoint the conference was unfruitful. No constructive suggestions were made in regard to industrial practice which were not already in effect. The public-health agencies had long since initiated campaigns directed toward what was recommendable from the health viewpoint. Although a portion of the housing is thoroughly unsatisfactory, it was not eligible for improvement by any of the slum-eradication agencies of Government, and presents a problem not essentially different from conditions that exist throughout the length and breadth of the nation. Believing Miss Perkins to be a sincere and discerning person, I suspect that some of her advisers must have been called on the carpet afterwards."

MINERALS AND NATIONAL DEFENSE

Dr. C. K. Leith, mineral advisor, National Defense Commission, speaking on the "Role of Minerals in the Present Emergency," at the afternoon session, declared at the outset of his address that he spoke as an individual and was not representing the Defense Commission. He said that the United States is better supplied with minerals than any other nation, but is lacking, in whole or in part, in a num-



Howard I. Young,
Chairman of the
Session on Min-
erals in the Pres-
ent Emergency

ber of "strategic" minerals. He listed these as manganese, chromite, tungsten, mercury, mica, tin, nickel, quartz crystals, industrial diamonds. Also lacking, he said, are certain grades of graphite and asbestos, classified as "critical."

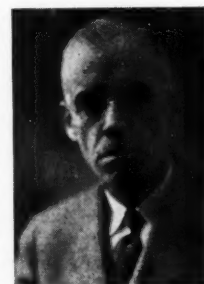
"The problem of national defense we now face," said Doctor Leith, "is to keep industry supplied for its rapidly expanding requirements and at the same time build up a government stockpile against an emergency when the necessary flow from outside may be restricted or stopped. Shipping is already so much disturbed that foreign supplies are not available in amounts greatly in excess of those currently consumed by industry, so progress in stockpile accumulation is slow. While the stockpile has been urged on Congress for many years, it was only recently authorized, and under present conditions will take some time to complete.

"The general plan recommended is to build up about a two-year supply in Government stocks.

Industrial stocks vary widely from time to time and we do not know what they will be when an emergency of unknown date arises. They might be seriously depleted.

"In figuring the size of stockpiles to be acquired, allowance is made for all possible domestic production and, to a less extent, for production from the rest of the Western Hemisphere. With the aid of the Bureau of Mines, the United States Geological Survey and many other agencies, public and private, the possibilities of domestic production of strategic minerals are being carefully reviewed, with the idea of encouraging such of them as promise a reasonable return for the money expended. This encouragement is taking the form of contractual purchases of output by the Government, loans for development, special investigations by technologic committees, etc.

"Washington has been overwhelmed with projects for mineral developments, good, bad, and indifferent, and because some of these projects are not supported, the charge has been made that the Government is buying foreign supplies at the expense of domestic production. This is not the fact. Only such supplies are being bought as cannot be produced from domestic sources with reasonable certainty and within a reasonable time. In planning for national defense we must play safe. We would not be doing our job if too much reliance were placed on projects, however meritorious, which are not yet proved and have in them considerable elements of doubt.



C. K. Leith

"Turning now to the general position of minerals in the present war, Germany started under a tremendous handicap in mineral supplies. The weight of materials on the other side was potentially so overwhelming that many of us fell into what may be the error of predicting that there could be only one outcome, that is defeat of Germany. Our prediction was based on the assumption that the available supplies would be promptly used. That proved to be a fallacious assumption. No matter how great the favorable balance of supply, if it is not used, and promptly, the advantage is lost.

"Germany has now added greatly to her supplies, particularly in iron ore, coal and oil, but, without control of the sea, still lacks many essential minerals, such as nickel, copper, tin, adequate quantities of oil, tungsten, vanadium, mica, quartz crystals, industrial diamonds, and others. With control of the sea, England is still potentially dominant in regard to mineral supplies. The question is whether this control can be held long enough to bring these supplies into action.

"The United States faces, in effect, the same problem. With control of the seas, its raw material position is impregnable. Without it, we would soon be in an inferior position. The United States is the largest producer, the largest consumer and the largest exploiter of the world's minerals. This position cannot be maintained by sitting tight and doing nothing about it. Potential weight of metal must be made ready for potential action. Let us face the realities. Hitler's announced intention is to acquire control of raw materials, without which his political and military ambitions must fail. To do this he must win control of the sea. If he succeeds, we shall be dependent on him for many minerals necessary to our industrial and military power and the maintenance of our way of life. Control of the sea assumes a new meaning for us. Our mineral position looms large in the shaping of defense policies."

In an address on "Strategic Mineral Procurement," Elmer W. Pehrson, mining engineer, U. S. Bureau of Mines, declared that procurement plans are confidential and can only be discussed in general terms. He cited figures on stocks of strategic minerals, and stated that conditions were generally good but that this does not mean the United States can be extravagant in the use of its minerals.



E. W. Pehrson

Tin was said by Mr. Pehrson to be the most serious problem at present, owing to disturbed Asiatic conditions, which leave the nation dependent upon Bolivian

production. The outlook for manganese, he pointed out, is better than that for tin, but "should foreign supplies dry up, the country could be in a bad way."

The strategic mineral procurement problem is being attacked in three ways. He cited these as "by stock-

piling, by expanding domestic production, and by conservation measures. Years ago some believed that the problem of deficient minerals could be solved only by providing stockpiles, but in later years students of the strategic-mineral problem are in general agreement that domestic deposits, though low in grade, should be considered as a supplemental source of supply. No one can foresee the length of an emergency, and consequently no one can guarantee that a stockpile accumulated in advance will suffice. Moreover, there are practical considerations, such as cost and market conditions, that preclude unreasonably large accumulations. Thus a sound program of preparedness in strategic minerals should include not only stockpiles as a first line of defense but plans for emergency use of such resources as we have at home."

Mr. Pehrson contradicted reports of discrimination against the domestic producer in building stockpiles and declared that the Strategic Materials Act makes liberal concessions to domestic producers.

Of the strategic minerals other than tin and manganese, he stated:

"Purchasing of chromite is proceeding rather slowly, although substantial quantities have been obtained from Turkey and Rhodesia. At present, the Government is buying only metallurgical-grade ore, supplies of which are none too plentiful abroad and extremely limited at home. Later in 1939, 25,000 tons of Alaska ore were purchased for six months delivery. The contract expired last May, and although a six months' extension was granted no deliveries have been made to date. Shipments from Turkey via the Mediterranean were halted temporarily when Italy entered the war, but recently some cargoes have been cleared through British and Italian officials.

"The outlook for domestic supplies is improving. As a result of the exploratory work by the Bureau of Mines it has been demonstrated that important reserves of off-grade chromite are available in Montana, and there are favorable indications in other states. Processes for converting these off-grade ores into products satisfactory for metallurgical use are being investigated, and negotiations are under way that may result in a sizable increase in domestic production. Industry stocks are exceptionally high and are greater now than at the first of the year. . . .

"The tungsten situation is less favorable than that of manganese and chromite. Imports have continued at a high rate, and production this year is higher than in 1939. Consumption also has gained, so that there has been only a slight improvement in industry stocks since January. Until recently the stockpiling program was not making much headway, because industry was absorbing nearly all available supplies, but in June the Government was fortunate in making a large purchase of Chinese ore. Negotiations for moving this material through Indochina were proceeding by cable about the time France collapsed. The shipment was delayed, presumably by Nazi interference, and for a while it appeared that the cargo would not be released by the new French Government. However, after strong diplomatic repre-

sentations, the ore was cleared and is now en route to the United States. This addition to stockpile reserves, together with activities under way to increase domestic production and imports from South America, will ease the anxiety over the immediate outlook for tungsten. . . .

"The rapid increase in the price of mercury during the past year has stimulated production and reduced consumption so that the country is now more than self-sufficient. Large exports in recent months have depleted industry stocks to some extent, but shipments abroad are being curtailed under the present export licensing system. Acquisition of a moderate-size stockpile has been authorized as a safety measure against possible future deficiencies in domestic production. . . .

"Nickel and antimony are available in adequate quantities in neighboring countries, so that no major procurement problems are anticipated in the near future. The present political situation in Mexico is causing some concern regarding the security of the supply of antimony ores from that country, but Bolivia, and the large low-grade reserves in Idaho, indicated by the Bureau of Mines exploration program in the Yellow Pine district, provide alternate sources of supply. . . .

"Although many serious problems are pressing for solution, I think we can safely say that substantial progress is being made in strategic mineral procurement. To be deficient in such highly essential metals as tin, manganese, chromium, and tungsten is indeed unfortunate in an era of highly mechanized warfare. But we must not lose sight of the fact that our remarkable endowment of mineral resources—such as copper, lead, zinc, coal, iron, and petroleum—has made us the greatest industrial nation, and potentially the greatest military power on earth, as well as the most self-sufficient of the great powers. Our deficiency in certain minerals is a minor weakness in our armor that can be strengthened by comparatively small effort. We should therefore continue our efforts in mineral preparedness until our objectives are achieved. We can not risk an Achilles heel in our national defense."

"Stimulation of Domestic Production of War Minerals" was the subject of an address by J. R. Van Fleet, vice president, U. S. Vanadium Corporation.

Mr. Van Fleet told of many lessons learned in the World War, and his remarks dovetailed with those of the preceding speakers. He in particular pleaded for no "hysteria."

"Supplies of minerals are flowing to industry on schedule," he said, adding that "most interruption is due not to war but to shipping. High rates on circuitous ocean shipping prevail, but this cannot be blamed on the shipping interests under the present conditions. There is no emergency at present on the principal ores, but we have to look to the future. If we wait for emergencies we have to depend on stockpiles of that date. It is up to the mining interests to provide the necessary materials."

Mr. Van Fleet urged the Bureau of Mines to develop and encourage prospecting and to locate instructors in strategic places throughout the mining areas to teach prospectors and young men interested in searching out

new fields in how to identify structure and ores.

Robert Linton, consulting engineer, of Los Angeles, Calif., and **H. C. Parmelee**, editor of "Engineering and Mining Journal," New York, N. Y., discussed various aspects of the general subject of war minerals and the problems arising under emergency conditions. The entire session was of great value in making clear the present status of national defense in respect to mineral supplies.

Tuesday's sessions were devoted to discussions of the industrial uses of silver; public mineral land withdrawals; public relations of the metal mining industry; geology and mining; and milling, placer mining, and gold recovery.

At the morning session **Dr. Alexander Goetz**, of the California Institute of Technology, described the industrial uses of silver.



P. G. Beckett,
Chairman of the
Tuesday morning
session

Doctor Goetz declared that silver has properties that have led to its application as a bearing material in motors and that it may replace tin as a lining for metal containers for foods and beverages. He cited the substitution of silver for chlorine in the treatment of drinking water as another potential use. He pointed out that as an addition to light metals, silver has been used up to 7 percent in aluminum and magnesium alloys for the construction of aircraft. The corrosive resistance of silver has resulted in its use in stainless steels and in storage batteries, he said.

From the standpoint of the silver producer, Doctor Goetz stated that there are two important developments which tend to decrease the employ of new silver in the future for use in the photographic industry:



Alexander Goetz

"On one hand relatively inexpensive methods for the recovery of the silver not used in the final product have been developed; on the other hand, the increasing development and popularity of color photography. Although silver is as indispensable in this art as in black-and-white photography, it is replaced in the finishing process by dyes, thus the final picture does not contain silver. Since the processing is done in large plants, the almost complete recovery of the silver originally employed is simple and thus tends to form a stock of photocatalytic silver owned by the film producer, which is only 'leased' to the photographer with the sale of the film. Of course, this situation is not important at present, but with the anticipated development of color photography it may become so in the future."

Richard L. Neuberger, Portland, Oreg., in an address on "Public Mineral Land Withdrawals," urged "a tapering off in the campaign to establish national parks which have boundaries that go beyond all rhyme or reason" and from which prospecting and mining are excluded.

Neuberger suggested that the establishment of national recreational areas, in which prospecting and mining, water conservation projects, grazing and hunting would be permitted, should satisfy both mining men and conservationists who seek to preserve scenic and recreational values in western areas.

"There is no valid reason," he added, "why a prospecting claim at the base of a great mountain peak should entirely exclude that peak from classification as a citadel of recreation and scenic majesty."

"The lifeblood of the West are its water, land, minerals, timber, and agricultural resources. Mineral resources range high in importance, and as Bonneville, Boulder, and Coulee power becomes more of a factor, that importance will increase. We must also remember that science has only tapped the many uses to which minerals can be put. Although war is a dreadful and shocking example to us, how much more important are materials and minerals in this war than in the dreadful conflict of 1914-18.



R. L. Neuberger

So I believe that unless there are imperative and exacting reasons not yet brought to light, the mineral lands of the Far West should be open to sound and prudent development. By this I do not mean any of the old timber land 'cut-out and get-out' methods. Mineral deposits should not be gutted and exhausted. They should be developed on a long-time basis and made to provide the maximum yield compatible with steady employment and use."

H. L. Faulkner, counsel, Alaska Miners Association, and **Robert S. Palmer**, secretary of the Colorado Mining Association, discussed this paper.

Faulkner cited numerous examples in Alaska of the misapplication of conservational theories, resulting in waste and detriment to development of that territory.

Palmer emphasized that mining men have fought against park extension for years and that people in the communities affected in the state of Colorado were perfectly satisfied with the Forest Service.

"We feel in Colorado the need of new mines," he said. "We think that there will be new mines found within these areas which at various times are being given consideration by our Secretary of the Interior to withdraw from mineral entry."

"We also feel in Colorado that we have been a little bit negligent in our attitude on this matter. We have been on the defensive. I think the basic mining law of the West hardly needs to be defended. It was not passed during any one administration. It is the result of years of effort, years of study and years of experience."

"It seems to me that the mining men of this western area have been slightly negligent in their duties in not taking the offensive and leading out on this question, by telling the people of the United States just what it means to develop these mining claims, so that these prospectors and miners can go and develop their ore bodies, and make their purchases from the farmers and the manufacturers, and so on."

An excellent example of public relations, a motion picture, "The Homestake Saga," was shown at this session. Following its presentation, **Carl J. Trauerman**, president, Mining Association of Montana, suggested the establishment of a public relations unit to give honest publicity to the metal mining industry. The object of such an organization, he said, should be "to stimulate primary mine financing and developments, to stimulate the

consumption of metallic products, to educate Congress and national and state bureaus on the economic importance of metal mining, and to educate the people of the United States in the significance of metal mining in their daily lives."

Charles F. Willis, secretary, Arizona Small Mine Operators Association, also discussing public relations, endorsed Mr. Trauerman's suggestion. He said there is a real need for an adequate public relations program and that every possible medium should be used in public relations efforts.

OPERATING PROGRESS

Two sessions were held on Tuesday* afternoon; one devoted to geology and



Russell B. Paul,
Chairman of the
Session on
Geology and
Mining

mining and the other embracing discussions of milling, placer mining, and gold recovery.

Ira B. Joralemon, president, Desert Silver, Inc., in describing "Mining Geology Today," declared that the ratio of success in the search for new mines by geologists is dependent upon individual luck as well as on skill and perseverance.

He divided the problems of the geologist into three classes—the search for great ore bodies, the search for small ones, and the examination of new mines or prospects—each of which demands its own geological method.

Mr. Joralemon praised the work of the State and Federal Geological Surveys and the care with which geologists for the larger mining companies go about their tasks.

He pointed out that most mining companies cannot afford thorough geological research, since the majority are small and their margin of profit is low.



Ira B. Joralemon

"At the bottom of the search for new mines," he said, "lies the inescapable fact that exploration is a harrowing and uncertain venture. At the very best, an exceedingly small percentage of the properties examined, or even developed, can be successful."

This ratio of success varies from the published record of a great Canadian exploration company that examined 2,000 prospects and did not find one worth spending a nickel on, to the intoxicating stroke of fortune of the occasional amateur who stumbles on a rich mine on his first try, Mr. Joralemon said.

From his own personal knowledge of some 1,500 examinations of various properties, he presented the following statistics, which he said may not present a fair record since there was much sorting out of hopeless prospects before the examinations started:

"One in three properties considered is worth a casual examination.

"One in 10 properties examined is worth at least a little development—often only to the extent of a few hundred or thousand dollars.

"One in six or eight properties developed—or 1 in 60 or 80 examined—can be made to yield a profit above the cost of development and equipment. In most cases the profit is small.

"One in 4 of the profitable mines—or 1 in 250 to 300 of those examined—will turn out to be a great success, that will return more than a million dollars a year."

Mr. Joralemon emphasized that the geologist searching for new mines must make rapid determinations and must visit many properties. This rapid method of survey, he pointed out, may lead to the discovery of a very rich mine or may result in the passing up of a good prospect through failure to make a thorough examination.

Of the hazards of mine examination, he stated:

"Unless the geologist who enters the field of mine examination thoroughly appreciates the hazards, he is doomed to disappointment. He may do the most careful and accurate work, and come to the right conclusion every time, and still never find a mine. The first hundred prospects he examines may be worthless. If he takes weeks for every examination, he will never get a chance to see any more. In his own eyes, and in those of his employers, he is a complete failure.

"The only way to ensure success is to make the laws of chance allies instead of ruthless adversaries. The geologist who wants to find new mines must carry on a constant race against time in order to see enough properties so that there will surely be good mines among those he examines. And with all his haste, he must avoid any risk of committing the unforgivable sin of turning down a big one."

Following Mr. Joralemon's presentation, Reno Sales, chief geologist of the Anaconda Copper Mining Company; Edward Thornton, general manager, Summitville Consolidated Mines, Inc.; George M. Fowler, consulting

geologist; and Francis A. Thomson, president, Montana School of Mines, also discussed the present-day status of mining geology, devoting their remarks to the views of management and of the scientific geologist.

Robert S. Lewis, professor of mining at the University of Utah, presenting a paper on "New Developments and Equipment in Metal Mining," told the delegates that revolutionary changes in mining methods and equipment have been superseded by continued improvements, refinements and adaptations of methods and of equipment to the specific problems at hand. The changes of the last two



Robert S. Lewis

years, he said, may be collectively described as trends.

He cited ground support as a very serious problem and listed as the possible solutions for this problem: the application of Fayol's

theory of doming; the use of steel rails put together in two sections to form an ellipse or circle where stripes with pillars are used, the use of narrower stopes; and hydraulic filling of stopes.

Through the installation of air-conditioning plants in mines abroad, Dr. Lewis stated that it will be possible to extend mining operations to a depth of 10,000 ft. In the United States, he pointed out that artificial cooling of mine air is used at two mines with markedly beneficial results. Of these operations, he stated:

"In one instance, a drift 5 by 7½ ft. in section and 1,800 ft. long was driven in rock having a temperature of 112.5° F. Cooled air, at a velocity of 320 ft. per minute, was sent through the drift for a year and conditions were then as follows: Air entering the drift 69.5 wet bulb and 91 dry bulb; air leaving the drift 71 wet bulb and 95 dry bulb. At this same mine it is now possible to begin stoping soon after completing a level. Formerly, without cooling the air, stoping was not started until connections to the level above had been driven and the block of ore has been allowed to cool for four years. Refrigerating machines are now more efficient though using only two-stage compression than when formerly using three-stage compression, and they operate at slightly higher speeds."

Mr. Lewis then high-lighted some of the changes coming about in methods and equipment:

"In mine ventilation, the axial flow or modified type of propeller fan is finding favor. Closer control is being paid to the quantity and quality of air being circulated in various parts of a mine. Unless the shafts were considered in planning the system of ventilation for a mine

the shafts may later prove to be the bottleneck in the circulation of air. Mine resistance may sometimes be reduced by increasing the area of the outlet shafts. . . .

"In regard to mining methods, where conditions are favorable, shrinkage stoping is followed, but strong walls and firm ore are becoming less common. Weaker walls and the presence of waste in the ore are bringing cut-and-fill stoping more to the front. . . .

"Shaking conveyors are being tried in block caving to transport ore from finger raises to main raises from the haulage level. Methods of feeding ore from the fingers is being worked out, but the question of timbering to keep the conveyor drifts open under the heavy pressure brought on them is a serious problem. The use of an inner reinforcing set or part of a set is necessary. Possibly steel sets might be used. . . .

"In block caving there is a trend toward 'grizzly control' with only two fingers and a somewhat wider spacing of draw points instead of having 'chute set control,' with four fingers from each set and a grizzly in the raise below the chute set. Grizzly control simplifies development work as well as operation, but it does not give quite the sensitive regulation of drawing broken ore that chute sets do. . . .

"In open-pit mining, large drills, as the Bucyrus Erie electric churn drill, with 9-in. bit, make holes 9½ to 10 in. in diameter. At some mines these holes are large enough to hold sufficient powder without springing the holes. Where holes are sprung, they usually fill up 3 ft. or so and should be drilled far enough below grade to allow for this and still break to the bottom of the benches. . . .

"Full-revolving electric shovels with Ward-Leonard control and caterpillar treads are ordinarily used. Dipper sizes of 2½ to 3 cu. yds. are more common on the iron ranges, and the 5-cu.-yd. size is most common at the porphyry copper mines. In fast-digging ground such shovels may make as many as three complete cycles per minute for short periods. Where transport is by trucks the efficiency of operations is increased by having bulldozers scrape a smooth track for the trucks and gather scattered material for the shovel. . . .

"For blasting, black powder is giving way to some form of dynamite in order to secure finer fragmentation of the material and to prevent the forming of ridges or 'camel backs' between holes. . . .

"Haulage in open-pit mines is divided between trucks and locomotives. On the iron ranges 15-ton trucks will negotiate upgrades of 10 percent and return on downgrades as steep as 20 percent. For stripping at copper mines, trucks as large as 22½ cu. yds. (45 tons) have found favor. . . .

"Underground, more attention is being given to keeping track in good condition. A concrete-lined drainage ditch has been found to keep the roadbed dry in one mine and prevented the sinking of ties into softened sections. . . .

"Drilling and blasting still remain the common method of breaking rock. Detachable bits are being increasingly used, as is sharpening by hot milling. . . .

"Shoveling by hand is being eliminated wherever it is feasible by using scrapers and mechanical loading machines. Loaders are used in driving drifts in ground where they must be protected against a weak back by heavy booms, which restrict headroom. The loader must pass its bucket between the booms when filling cars. The basic designs of loaders have changed but little. Such an improvement as replacing the 4-cylinder air motors with 5-cylinder motors gives greater horsepower, greater torque at low speeds, and the ability to operate successfully on air pressures as low as 50 lbs. per square inch. Heat treating of gear trains, gear shafts, and axles make for longer life and

less cost for repairs. Small scrapers are being used in stopes only three or four sets long. Scrapers are now so designed that an open-hoe type can be converted into a quarter, half, or full box type by adding the proper side plates and braces. The cutting edge is made of several manganese steel plates bolted to the frame so the plates at each end can be interchanged with inside plates when the end plates become worn. These scrapers can be used with either two or three drum hoists. . . .

Professor Lewis also pointed out that several mining companies are installing large hoists which have two bicylindroconical drums arranged in tandem, which arrangement permits placing the hoist close enough to the drum to avoid the need for intermediate idler towers.

Following his address, F. S. McNicholas, assistant general superintendent, Climax Molybdenum Corporation, described developments in scrapers and new methods in their application. J. Wilbur Van Evera, of Crosby, Minn., outlined the use of truck haulage at the iron mines. J. J. Curzon, manager, Chelan Division, Howe Sound Company, described mining methods at that company's operations; and Paul Sirkegian, general superintendent, Consolidated Coppermines Company, explained late

Ross D. Leisk,
Chairman of the
Session on Mill-
ing, Placer Min-
ing, and Gold
Recovery



developments in diamond drilling and use of conveyors.

The other afternoon session was given over to discussions of milling, placer mining, and gold recovery.

Bancroft Gore, professor of metallurgy at the South Dakota State School of Mines, presented the initial paper, on "Progress in Milling Practice and Equipment."

He declared that the metal mining industry must aim to adjust its technology to present conditions, where the quality of ores is dropping and where the combined efforts of prospecting by mule and geophysics has failed to find any tonnage of considerable quantities of high-grade ore that will perceptibly alter this trend. He went on to say:

"Quite a few of the group before me know that behind the present unbelievably high standard of milling equipment, a cross-section of which is on view in the form of the many exhibits at this con-



Bancroft Gore

vention, there has been over 50 years of continuous applied effort, working under our competitive economic system which has suffered such terrific attacks during the past seven years, and this effort on the part of the equipment manufacturer or engineering works has been and is today striving to

meet the requirements of the operator at every turn. This is a slow, costly and more often than otherwise, a disappointing and money-losing experience, but the end result is one of the most remarkable situations in all engineering. Much remains undone, but the mill of today has heavy-duty units; time out for repairs has shrunk to such an extent that most foreman shift reports do not carry such a heading, maintenance costs, while still a vulnerable item, are ridiculously low under modern conditions compared to what we had in days when we tried to keep 40 stamps dropping, or a Huntington or Chile mill in motion a week without bearing or shoe troubles. Ball and roller bearings find increasing applications. The old line-shaft and troublesome broadbelt drives are gone in favor of direct motor or V-belt drives. Attendance on machines to keep them adjusted and lubricated has dropped to an all-time low; for instance, two men on shift below the crusher house can now run a 350-ton all-sliming fine-grinding decantation cyanide mill. This one item of labor economy may turn out to be a life-saver with the calling of our citizens to military training and their removal to industrial centers. Flow of material tends more and more to be automatic, and the best practice now undertakes to place it all under centrally located controls increasingly automatic, as in the new pulp density controller, all adjusted for maximum performance.

"Equipment is now designed to make any replacements to wearing parts a matter of hours in place of days, and these wearing parts are being provided from an increasing number of wear-resisting steel alloys or molded rubber. Lubricants are provided to meet each type of service, and bearing troubles, once the headache of the operator, are fading. Dust prevention; safety protection; better lighting, heating, and ventilation; clean, attractive mill interiors are here for good. In general, there is an effort for greater simplicity in the design of all equipment, fewer moving parts, and a more compact arrangement of the separate units with the ultimate aim worth the study of every concentrator engineer of a one-man control at a central station common to the whole mill, if it is under 500 tons capacity, or to a single section in the case of the larger mills."

Professor Gore cited the following as trends in milling practice and equipment usage:

"More consideration is given to larger storage capacities, both above and below the crusher units, and these crushers work faster than ever. . . .

"In the field of crushers, the trend in the large mills seems to be toward doing more crushing by two or three stages and leaving the ball mills to do the grinding. That is, the tendency seems toward a finer feed to the ball mills, which opens the possibilities of a return more generally to single-stage grinding, for flotation work at least; again a definite trend in the direction of simplicity of design.

A favored set-up is the large primary crusher, jaw or gyratory, followed by a cone crusher, and a short head below it in closed circuit with vibrating screens. The almost universal opinion of the various mill superintendents at the large copper mills in the West is that the ball mill is not suited for doing with best efficiency any considerable coarse crushing and fine grinding at the same time. . . .

"The large heavy-duty crushing rolls seem to be losing ground to the reduction or short-head gyratories, although their performance at several leading mills passes all competitive equipment where the rod or ball mills take a comparatively fine feed. Operators complain about the high maintenance of rolls, especially when in closed circuit with elevators and screens. Two-stage roll fine grinding in the smaller lead-zinc mills of the Tri-State area is still the accepted procedure, but it is interesting to note that with the coming of the cone process of separation at the 10,000-ton Central Mill of Eagle Picher and the 2,700-ton Mascot Mill of the American Zinc, Lead and Smelting Company, rolls have given way to reduction crushing, evidently because the new separation process is taking a product remaining on a 3/4-in. round hole for Mascot and 3/16-in. woven-wire cloth for Central, sizes well within the range of efficiency of the standard and short-head crushing cone units. . . .

"Looking back over the last 10 years, we are impressed with the remarkable development of crushing equipment, particularly for delivery of finer products. The faster operation of these units and continual refinements in design are giving us better grinding operations in ball and rod mills, while their astonishing output makes the crushing department more generally a one-shift operation. An interesting new design in the fine-reduction field is one with the crushing head comprising two separate mantles of different diameters assembled one above the other with a common head center, the effect being two superimposed short heads, thus undertaking to offer a two-stage unit without the usual vibrating screen common to the standard types in general use. . . .

"It is one drawback with reduction crushers in general, unless operated wet, that most sticky ore limits their proper performance, and this has stimulated manufacturers of screens and screening equipment to develop some highly efficient units for use ahead of them. . . .

"In the field of grinding equipment, many of the larger companies are looking into the merits of the 10-ft. diameter ball mill for capacities of around 1,500 tons per day feeding an all minus 1 in. or 3/4 in. crusher product for separation down to minus 65-mesh. This shows the trend toward fewer operating units for the same capacity and also confidence in the rugged construction with minimum time out for repairs and the usual replacement jobs, such as new liners and scoop noses, for obviously standby units tie up heavy capital. . . .

"Flotation continues to advance over an ever-widening horizon, its latest triumph, so far as national defense program is concerned, being the selective separation of the non-metallic mineral, manganese carbonate, from complex sulphides, and its further separation from gangue constituents to give a concentrate pure enough, and particularly low in sulphur, to be sintered into nodules for melting to ferro manganese. This, in outline, is the basis of the process developed after several years of research and pilot-mill operation by the Anaconda Copper Mining Company for its 1,000-ton plant, under construction at Anaconda, Mont. Other non-metallics of defense value and yielding high recoveries are quicksilver, vanadium, and lithium. . . .

"In the field of gold recovery we note a trend toward lowering the alkalinity

when milling with cyanide solutions, this giving, in many cases, but not invariably, a higher extraction. It has long been realized that high protective alkalinity, although favorable to slime settlement, in some way reduced recovery. Now with the use of causticized starch in quantities as low as 1/10 lb. per ton of ore milled, thereby replacing lime as a settling reagent, the way has been cleared for dropping the alkalinity to as near neutrality as operations will allow. By the clever use of delicately adjusted slacked-lime feeders in the ballmill circuit and at the agitators, combined with frequent hydrogen ion determinations of the mill pulp at classifier overflow and outlet of agitators, alkalinities as low as 1/50 of a pound of lime per ton of mill solution corresponding approximately to a pH of 9.3 are possible. For such careful control work as this it is interesting to note that portable industrial instruments are now available for continuously measuring electrically, with high accuracy and speed, the pH content of mill solutions in cyanide and flotation systems, one example of a line of equipment developed for the chemical industries but of unquestioned value in the control of pulp through the up-to-date mill. . . .

"The achievements at Mascot, Tenn., and Picher, Okla., in the commercial development of the sink-and-float process raises the question for mineral dressing as a whole as to whether our flowsheets should not be rechecked to see if extraction of the major portion of the values cannot be had nearer the start of our systems and at coarser mesh, in fact ahead of the costly grinding process and in the form of a coarse bulk concentrate with reject to waste of the resulting coarse and impoverished tailing. This leaves for any subsequent grinding and selective separation by jigging and/or flotation a considerably reduced tonnage of a grindability usually much less than the rejected gangue. Type of mineralization, not so favorable, of course, in our western mining districts of disseminated sulphides, is a basic determining factor for this study."

Professor Gore emphasized the significance of the employment of research and testing engineers to supplement the usual assayer and chemist, as a positive sign of continued progress in mill operations. He stated that the mining schools are establishing new courses in all branches of ore dressing, and even in pilot-mill operation, in order that they may help serve the metal mining industry.

Following Professor Gore's presentation, Elmer Iserr, chief metallurgist, Eagle Picher Mining and Smelting Company, described the M. B. I. differential density or "sink-and-float" process and illustrated its operation with slides. Patrick Butler, Butler Brothers, outlined the use of this process as applied in the beneficiation of Minnesota iron ores, using a ferro-silicon medium. These developments have been fully described in the February and September issues of MINING CONGRESS JOURNAL.

Max W. Bowen, mill manager, Golden Cycle Corporation, and T. G. Chapman, dean of the University of Arizona, also participated in the discussion.



Chas. M. Romanowitz

"New Developments in Placer Mining and Recovery of Gold" were outlined in a paper by Charles M. Romanowitz and Herbert A. Sawin, Yuba Consolidated Gold

Fields, which was presented in their absence by E. B. DeGolia, president, Gold Hill Dredging Company.



Herbert A. Sawin

Speaking of developments in dredge design, the writers stated that it is apparent

that dredge designers will be called upon in the future for stronger and more powerful dredges, capable of handling greater volumes of gravel and at lower costs than today. They expressed their belief that, regardless of the present world strife, there will always be a demand and use for gold, and that the placer miners' efforts in the future will be guided by the hope for profits.

They cited the Becker-Hopkins dredge as a comparatively recent development in dredging, and stated that two of these are now being used successfully in Alaska. This type of equipment, they said:

"incorporates successfully a single bucket excavator. In early days of dredging, in California, attempts were made to substitute a single bucket on a digging boom to be used instead of a bucket-line. Early attempts were unsuccessful and placer miners have made no attempt until very recently to use this idea again. The boom and bucket on a Becker-Hopkins dredge are integral, and material elevated by the bucket slides down the boom, which is trough-shaped and telescoping. From the boom the gravel slides into the screen, aided by a large amount of water supplied to the boom at the bucket. This water comes from a tank located on the bow-gantry at a point close by the bucket in its maximum elevated position. In digging, the bucket is dropped, almost vertically, at the rear of the well in the hull, and is pulled by steel cables in a horizontal position along the bottom of the pond to a point below the bow, from where the boom and bucket are elevated in a radius to a point where, aided by flushing water, the excavated material slides down to the screen. These dredges do not swing on a spud but are operated against a square face, being moved sideways on the pond by lines, which also hold the dredge in digging position. These dredges have been developed to meet requirements for working properties such as have been mined by

dragline outfits, and offer the advantage of lower investment as the need for a dragline excavator is eliminated. All the component parts for the operation are mounted on one hull. In areas subject to rising water, this is important, as the complete unit floats and there is no dragline nor other digging unit to be flooded out. At the present time it is thought that these dredges can be operated economically to depths of 25 ft. below water level. The dredges now in use have 1-cu.-yd. buckets and can handle about 1,800 cu. yds. of material daily, operating two 10-hour shifts."

They pointed out that one or more caterpillar tractors are found on practically every placer mining job, where they are used for hauling, moving material, leveling and stripping.

In California, they stated that the use of a portable washing plant equipped with trommel and centrifugal bowls or jigging equipment has met with success.

"A comparatively small volume of water is used for screening and recovery purposes; the excavation, however, is kept as dry as possible. While such plants are limited in capacity, they have been successfully operated on properties where values are high. One operator strips overburden to a depth of about 9 ft. and washes only gravel deposits lying beneath the overburden to a total depth of about 12 ft. In other words, about 3 ft. of gravel, averaging 80 to 90 cents per cubic yard, is put through the screening and recovery units. It is possible in an operation of this kind to follow the pay-streak. As the excavation is dry, lean gravel can be avoided and rich pockets and cracks can be cleaned up by hand if necessary. Limited capacity is offset somewhat by the fact that only gravel of high value is washed. Portability and closely controlled excavating because of the dry hole are advantages."

Speaking of gold dredges, they stated:

"In very recent years there has been a revision of thought in connection with the arrangement of tables and sluices on gold dredges. On Yuba No. 20, an 18-cu.-ft. dredge owned by Yuba Consolidated Gold Fields, the table area compared with other dredges of the same size has been reduced by approximately one-third; fore-and-aft sluices have been practically eliminated. This has been accomplished by rearranging the athwartship sluices, permitting better distribution of fines as they are delivered from the screens to the tables. When originally designed, it was thought necessary to provide Yuba No. 20 with 8,400 sq. ft. table area, but in actual operation this has been cut to 5,600 sq. ft. Water to sluices is under better control and evenly distributed to the tables. Improved recoveries are noticeable, and there is a more general distribution of values where formerly a large portion of the clean-up was made in the first two or three sluices.

"Men interested in placer mining are more or less acquainted with the great increase in the number of dredges which have been built or put back into service during the past six or seven years. The increased price of gold had much to do with the revival of an industry which in 1915 was thought to have been at its peak and which in 1920 was rapidly depleting known dredging areas. Dredging companies had records of marginal properties which could not have been worked profitably at the old price but which were quickly made available for dredging under the new price of gold.

Some of these properties are much deeper than had been worked previously, and among the deep-digging dredges built recently are Yuba No. 20, referred to above, and Yuba No. 17. . . .

"Two important features of Yuba No. 20, which are mentioned because of their importance to the placer dredging industry, particularly to those who are concerned with deep digging dredges, are the Perry Patented Bucket Idler and the Yuba Mud Pumping System. The Perry Idler is mounted on the underside of the digging ladder about midway, and controls the catenary of the bucket-line in its return to the lower tumbler. The support given to the line in this manner has resulted in decreased wear on bucket pins, bushings, and heelplates. Supported in the middle, the line is free from excessive slapping and the resultant wear and vibration. . . .

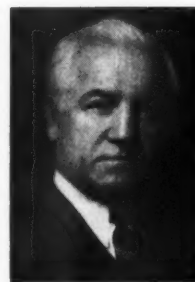
"There are today in western United States, Alaska, and the Yukon Territory about 125 bucket-line dredges, some having been first built about 35 years ago. Operating costs range from approximately 3 cents per cubic yard upward, depending on gravel conditions, bucket size, and yardage. It is a primary requirement of all successful dredging to operate as nearly continuously as possible. Many dredges average better than 22½ hours per day. Dragline operators apparently have not been able to approach this operating time, and this may be the reason why operating costs are generally much higher than those of standard bucket-line equipment of equal capacity. Several dredges have been constructed with direct-current electrical installations, and one company in particular, Natomas, has had good results with dredges of this type. The variable speed bucket-line permits an operator to speed up in easy digging and automatically to slow up when the going is hard. While this is considered an advantage by some dredgemen, others feel that a bucket-line, driven by a-c motors at a standard speed, accomplished comparable results and yardage without the initial expense and maintenance costs that d-c equipment involves. At least two a-c operated bucket lines in California have been slowed down materially by experienced operators for the purpose of doing a better excavating and mining job. Variable speed lines, operated at high speeds especially, are costly to maintain. Bucket-lines with a-c drives can be operated at slower speeds, if desired, by simply installing several points of control on equipment. Here personal opinion governs and, as variable speeds represent an important development in placer mining, they are mentioned here."

TAXATION

Inequities of tax legislation, particularly as it affects the mining industry, were attacked by speakers at the Wednesday morning session.

Karl Riemer, attorney, of Washington, D. C., speaking in the absence of Ellsworth C. Alvord, counsel for the American Mining Congress, said that the American business man knows that adequate national defense will cost a lot of money and consequently accepts the fact that taxes will be high for a long time to come.

He traced the legislative history of the pending excess profits tax bill, and in describing the measure as passed by the House of Representatives, characterized it as a mass of highly complicated and technical phrase-



D. A. Callahan,
Chairman of the
Session on Taxation

ology, most of it practically unintelligible even to the tax expert.

He pointed out that the measure had been put forward as one designed to tax such profits as might be in excess of normal. There was no objection to such a tax, he said, but the Treasury Department has been insisting upon a tax which will not only reach excess profits but also impose heavy additional burdens on normal earnings.

The principal demand of the witnesses at the congressional hearings, he stated, was that the measure lay down fair and workable rules for the determination of excess profits. He said: "In the mining industry, for example, the income of a single year is not a fair basis for measuring tax liability. That income may be the result of many years of effort."

Mr. Riemer paid tribute to the Senate Finance Committee for its earnest effort to give full and fair consideration to the bill and for its endeavor to provide some solution for the difficult problems faced by the mining industry. At the same time, he warned, the tax will be a brutal one, even if many improvements are made.

Following his remarks, Arthur L. Baldwin, attorney, of Denver, Colo.; Robert M. Searls, counsel, Newmont Mining Corporation, San Francisco, Calif.; and Donald A. Callahan, Wallace, Idaho, assailed provisions of the then pending bill and urged that Congress recognize the need for fair treatment of the mining industry.

In a discussion of "The Future of Gold and Silver," Walter E. Trent, of Washington, D. C., traced the history of the two metals and expressed the view that gold has become demonetized by price increment which is a direct result of demonetization of silver by price depreciation. He declared that not only have the international bankers victimized themselves but also all great countries of the world by their money-tampering schemes.

The present gold and silver hoards

of the United States, he said, are a liability because of nonuse, but if they are put into the banking public cycle they will be the means of transforming the country into a beehive of activity and prosperity.

Warning was given that the gold, if left sterile indefinitely, might perhaps become the instrument of one President or another in some international political maneuver which would not take into account that the gold reserve had been paid for by depositors without its compensating use.

"The temptation had better be removed," Trent declared, "by the establishment of a stabilization currency gold reserve of 10 billion dollars. Then there will still be two billion dollars in the stabilization fund and nine billion dollars more of gold in the United States subject to export by the thousands of outlets which exist when gold is restored to use as legal tender, circulatory money."

"The first line of defense," Trent declared, "is an adequate and conservative credit structure based on gold and silver."

He urged a definite return to the use of gold and silver as primary monies at once. He said that the most serious international problems could be solved by an unimpeded international use of silver, in its complementary use with gold.

"Canada's surplus wheat problem would be solved if the United States would give and take silver money for Canada in settlement of trade balances. The hungry nations of the world would buy all the surplus wheat of both Canada and the United States, and they would buy all of the surplus cotton of the United States if one ounce of silver would buy a bushel of wheat or 10 pounds of cotton.

"It is no fault of the United States that Canada does not pay its own silver producers the bullion price which the United States pays to its silver producers, and it is not the fault of the United States that Canada does not coin her silver bullion production at the same rate of coinage prevailing in the United States. This practice would not only give Canada additional circulating currency, but it would materially assist in equalizing the value of their dollar with that of the United States.

"Canada should pay to its silver producers 71.11 cents per ounce, and should coin same at \$1.29 per ounce (371.25 currency of fine silver per dollar). This would give to the producers 55 percent of the monetary value of the silver, and give to the Canadian Treasury as seigniorage profit, 45 percent of the monetary value of the silver—an identical practice with that now existing in the United States.

"The United States and Canada should make part of their defense agreement, the utilization of silver as well as gold in the settlement of trade balances. If the United States will apply the "good neighbor" policy by offering reciprocal monetary treaties, there would immediately be a rich reward both to the United States and the good neighbors involved, and many more good neighbors would apply

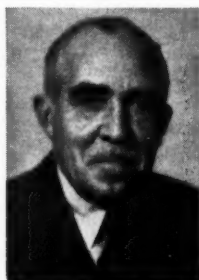
for membership in the monetary reciprocity program.

"Shortly thereafter, all of the nations of the world would be joined together by a reciprocal monetary union based upon gold and silver. National economic independence would return to all of them and international wars would come to an end. The world will then have reaffirmed the basic monetary law that the purchasing power of gold varies inversely with the world price of silver.

"It must not be presumed that the reciprocal use of silver will cause any great economic benefits to the world unless at the same time there is a concomitant use of gold not only between countries but between individuals."

WAGE-HOUR

Colonel Philip B. Fleming, Wage-Hour Administrator, in addressing the Wednesday afternoon session, declared that no relaxation of the overtime provisions of the Wage-Hour Act at this time "is either necessary or desirable."



Col. Philip B. Fleming

"The war and the necessity for building up our national defense have caused some persons to feel that the hours requirements of the Fair Labor Standards Act should be relaxed," Colonel Fleming said. "Proponents of the relaxation of these provisions have taken the stand that there is a shortage of skilled labor and that this labor should be permitted to work overtime without paying time and a half for the overtime. However, it is necessary to train more workers now. The overtime penalties of the Wage-Hour Act provide an important incentive to employers to begin training additional workers."

The administrator declared that he felt the principle of a floor under wages and a ceiling over hours is here to stay and urged "the fullest cooperation among industry, labor and the Division to bring about achievement of its purpose."

Admitting that the metal mining industry differed widely from other industries, Colonel Fleming cited the following as the problems that most frequently were submitted by the industry:

"1. Must the time spent by the underground worker in traveling from the portal to the face be counted as time worked?"

"2. Must time spent at lunch underground be considered as time worked?"

"3. What is the status of the lessee miner or the leaser? Is he an employee of the mine owner or really a lessee? Must he and his helpers, whom he employs and pays, be paid time and a half for overtime?"

J. J. Carrigan,
Chairman of the
Session on Wage-
Hour-Mining
Loans—Carlton
Tunnel



"4. What deductions from wages will be considered by the administrator to be reasonable?"

"5. Will the operator be protected from liability if he reduces the hourly rate to avoid the payment of overtime?"

"6. How about the construction employee—the carpenter who produces no goods for commerce, but merely builds new bunk houses, or a drying room, or a recreation hall? Is he covered by the law and must he be paid time and a half for overtime?"

In the consent decree of the Cornucopia Gold Mines, Colonel Fleming pointed out that it was ruled that time consumed from portal to portal of the mine constitutes hours worked. On the other hand, he pointed out that in the bituminous coal mines, the Wage-Hour Division, following the traditional custom of the industry, had considered only the hours at the actual working place as "hours worked."

Of the question of lessee and lessor, he said: "Each case must be determined on its particular facts, with primary importance given to the terms of each individual lease agreement and the method of operation under such agreement. If under the lease agreement, control and supervision over the operations of the so-called lessee are reserved to the lessor, such lease agreement embodies the normal incidents of the employer-employee relationship and the so-called lessees will be considered as employees under the Fair Labor Standards Act.

"On the other hand, if a particular lessee is operating mining property which is not a part of the property currently being operated by the mining company with regular employees, and if in the lease agreement the mining company does not have the right to control the lessee in his operations of the mining property, it may well be that the lessee is not an employee of the mine owner but is in fact an independent operator of such property. If such lessee has his own employees who assist in the operation of the leased mine, such employees must be paid in accordance with the Fair Labor Standards Act if the products of the mine move in interstate commerce."

Repairs or alterations to existing structures used in the production of goods for interstate commerce are covered by the act, according to Colonel Fleming, whereas the construction of entirely new structures may be exempt.

Concerning time spent at lunch, Colonel Fleming said "we are not yet disposed to take any particular position as to whether the half hour spent eating lunch underground may be deducted from hours worked."

Mine operators in general, he pointed out, have attempted to meet the hours requirements of the Wage and Hour Law by one or another of three types of adjustments: reduction of the number of shifts to five a week of eight hours each; or shortening of the shift to approximately seven hours; or by paying the overtime above 42 hours a week. "When the 40-hour provision becomes effective in October," he said, "it will require the payment of overtime or the cutting of shifts to five a week, at some increase in labor costs, unless this is compensated for by the greater productivity of the workers, as has been the experience of at least one large mine studied by our economists."

Following Colonel Fleming's paper, Edgar T. Zook, counsel, Idaho-Maryland Mines Company, and H. L. Faulkner, counsel, Alaska Miners Association, presented complaints of the mining industry under the operation of the Wage-Hour Law.

Mr. Zook, after complimenting Colonel Fleming on his fairness in administering the law, assailed the law itself and its application to the mining industry—where high wages have always prevailed—in vigorous terms. His remarks were met by sustained applause.

Mr. Faulkner urged the mining industry to adhere to the declaration of policy adopted by the metal mining men at last year's convention to the effect that the Wage-Hour Law ought to be repealed. He said that experience in Alaska has been that the labor unions have abundantly demonstrated that they are able to regulate hours and wages through their organizations without the necessity of a Wage-Hour Law and a multiplicity of interpretations of its provisions.

Since there is no immediate prospect of repealing this law, he stated, "the next best thing is to have as plain and simple a law as possible and one that needs a minimum of interpretation by administrative officials."

"Our mails are loaded down with bulletins, notices of hearings, interpretations and regulations, and as is always the case with a law of this nature which is so un-

satisfactory and impractical and which requires such a large force for its interpretation alone, to say nothing of its enforcement, we get many absurd results.

"So far as the mining industry in our Territory is concerned, we find it difficult to adopt one blanket rule for a company like the Alaska-Juneau with 1,000 employees operating within and adjoining a town of considerable size, where labor generally is plentiful, and the Chicago company operating on a remote island with a small crew doing only experimental work, probably at a loss to the owners, and it is difficult to apply the same rule for a company with 1,000 employees operating three regular shifts the year round, and the placer mining industry of the interior where the seasons are short and advantage must be taken of every hour of sunshine and of the seasonal water supply. Practically the only mining in Alaska, outside of a little coal mining and a small amount of platinum production, is the gold mining. Some of it is on a very small margin. The price of gold is fixed, and the industry cannot go on forever absorbing higher costs, employing more men and bringing themselves to a point where the cost of production overtakes the value of the product.

"What I have said is not to be taken as a reflection on the men who are attempting to administer this law. We want to do the very best we can with them, and all we ask in return is reasonable and fair treatment. It is difficult at best to follow all the ramifications of the regulations and interpretations but we are willing to do the best we can, and we want to be informed. Recently a man came to the Territory representing the Wage-Hour Division. He visited one or two camps and whether he found anything wrong with the system of operating, with the method of bookkeeping, with the computation of time and overtime, we do not know, for his only statement was that he was making a survey and would report what he found to the administrator in Washington. We feel that if such inspectors and surveyors come to the Territory and find anything wrong or have any suggestions to make, that they go directly to the employer and inform him. We feel that this is not asking too much. We know that the administrator of this law has a difficult task to perform and that there has been imposed upon him the burden of making interpretations from day to day of a law which should in all fairness be clarified so that employers and employees do not need hundreds of regulations and scores of interpretations in order to know just where they stand, and, in the meantime, we feel that the Mining Congress should continue its efforts for a repeal of the law, and, if that cannot be accomplished, for the necessary amendments to simplify and clarify it."

In the absence of Senator James E. Murray, of Montana, due to legislative duties making necessary his stay in Washington, Dr. Francis A. Thomson, president of the Montana School of Mines, presented his address entitled "Expansion of R. F. C. Loans for Mining." It listed these Federal aids to the mining industry:

"1. Authorization of loans and purchases for the purpose of producing, acquiring and carrying strategic and critical materials, including metals, and authorization of the building of stockpiles of such materials.

"2. Authorization of investigations of domestic deposits of strategic minerals and metals by the Bureau of Mines and Geological Survey.

"3. Authorization of Reconstruction Finance Corporation loans for developing small mineral properties."

The Montanan said that while this country has sufficient basic materials to meet defense needs, its present supplies of some strategic minerals are "far from adequate." The Federal program, he said, will help stimulate production from the "extensive undeveloped deposits" of such minerals in this country.

"The erection of smelting plants for strategic metals financed by RFC loans, or built and operated by the Federal Government during this emer-



Hon. James Murray

gency, would appear to be a step in the right direction," Senator Murray said.

"It would, in the case of tin, for example, allow us to take all of Bolivia's concentrates and furnish them with dollar credits to purchase American goods.

"In the case of manganese and chromium, if the capital investment is taken care of by the Federal Government, our domestic deposits of these strategic ores can be fully utilized.

"If these minerals are developed now, they may very likely withstand foreign competition when normal conditions return."

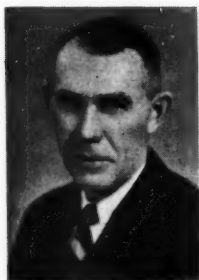
The Montanan praised the thoroughness with which the Bureau of Mines is investigating domestic mineral deposits.

"Altogether, I am advised by the Bureau that 12 projects have been completed or are now being worked on. The metals covered are antimony, chrome, manganese, nickel, tin and tungsten," the Senator said. "The states in which these deposits occur are Montana, Nevada, California, Oregon, Washington, New Mexico, Idaho, South Dakota and Wyoming."

CARLTON TUNNEL

The Carlton deep drainage tunnel was discussed by A. H. Bebee, vice president of the Golden Cycle Corporation.

Mr. Bebee pointed out that the work on this tunnel is being privately financed by the Golden Cycle Corporation, under the direction of Merrill E. Shoup, president. As a result of the tunnel, it is estimated that additional depths for large mining operations will range from 200 to 1,000 ft. The



A. H. Bebee

proposed 6-mile tunnel had been driven a distance of 4 miles at the end of August.

Mr. Bebee declared that taxes, including sales and use tax, old age pension, unemployment

insurance, and many others, amount to nearly \$2 per foot of tunnel.

He emphasized that since the Golden Cycle mill is almost wholly dependent upon Cripple Creek for its supply of ore, the company realized the necessity to provide additional drainage in order that greater depths than can now be worked profitably, might be developed and mined. He went on to say:

"This tunnel is the third drainage bore to be driven in the Cripple Creek area since it started producing telluride gold ores in 1891. For some time after mining began, no water was encountered, and it was believed that Cripple Creek was to be a 'dry' camp. Credence was lent to the theory by the fact that the location was nearly 10,000 ft. above sea level, with considerable lower-lying terrain close by to which ground water could gravitate. However, as subsequent geological examinations disclosed, the mineralized zone is the denuded crater of an extinct volcano. At the surface it constitutes an irregular area roughly 4 by 3 miles in size. The prevailing rock is breccia, characterized by angular fragments cemented together. It evidently was formed by recurring eruptions of lava each of which broke up partly solidified rock crusts from previous flows and rejoined them. This plug was intruded through a compact granite, locally termed Pikes Peak Granite, which now surrounds it. Secondary volcanic activity continued for some time after large-scale eruptions ceased, with the result that dikes, flats and irregularly shaped masses of phonolite and latite were forced upward through the breccia and the adjoining granite. . . .

"All this internal churning broke up the crater rock to a considerable degree and left it more porous than the granite that envelops it. In a measure, it represents a gigantic sponge that has soaked up ground water for countless ages and occupies the neck, so to speak, of a granite bottle the sides of which are relatively impervious. The only way to drain out some of the accumulated water is to bore a hole through the granite incasement at a level below the water surface, and that, substantially, is what is now being done for the third time.

"The portal of the Carlton Tunnel is located $8\frac{1}{2}$ miles south of the towns of Cripple Creek and Victor, near the junction of Cripple Creek and Oil Creek. The portal elevation is 6,893 ft. Its course is N. 49° 54' E. The size of the tunnel, originally was $8\frac{1}{2}$ ft. by 9 ft. but at present it is about 11 ft. high by 10 ft. wide, including a 4-ft. 6-in. radius circle arch. The finished tunnel size depends on the type of ground encountered. The first 300 ft. had to be supported. The main drive will be 32,000 ft. in length to a position under No. 2 Portland Shaft, at an approximate elevation of 6,990 ft., or 1,120 ft. below the present drainage

level of that property. The grade will be + 0.3 percent.

"To accomplish complete drainage for the Cresson and Vindicator, two laterals will be driven from 4,000 to 5,000 ft. each, from the Portland mine.

Mr. Bebee explained that drilling is accomplished by five Ingersoll-Rand DA 35 drifter drills equipped with power feed and mounted on a drill jumbo. The jumbo crew, consisting of five machine men, four chucktenders, one steel nipper and a shift boss, fire six or more complete rounds every 24 hours.

Other equipment consists of an Eimco model 21 loader, Grandby-type car of 84 cu.-ft. capacity, a "Cherry Picker," and four 8-ton storage battery locomotives; slide rails of modified channel sections are used when necessary.

The tunnel heading is ventilated by exhausting 5,000 cu. ft. of air per minute through 18-in. steel vent pipe. Compressed air for drilling and mucking is supplied to the face by 6-in. steel tubing.

Mr. Bebee stated that "no serious water problem is anticipated before a point 25,000 ft. from the portal has been reached."

LABOR PROBLEMS

Edmund M. Toland, formerly general counsel for the Congressional Committee Investigating the National Labor Relations Board, was the first speaker on Thursday morning's session, at which time he discussed the findings of that committee.

Delegates expressed great interest in and approbation of his courageous attack upon the administrative evils of the National Labor Relations Board. Since this address is so timely, coming as it does when the Smith amendments to the National Labor Relations Act are pending before the United States Senate, it has been reproduced in full elsewhere in this issue beginning on page 49.

Following Mr. Toland's presentation, Alexander R. Heron, director of industrial relations, Crown-Zellerbach

Corporation, spoke on "Present Day Industrial Relations." He said that collective bargaining is simple and should not be opposed by any intelligent employer.

Mr. Heron pointed out that specialization is one of the great problems of the day. "Whereas," he said, "the farmer of former times used to produce his own food, he can no longer bother with sidelines; he depends upon specialization and buys his food from a source dealing with foods. As a result of such specialization we find that to deliver a bottle of milk to a New York doorstep some 25,000 persons are involved.

"The only thing in God's world that a worker owns today is a payroll number. In the old days a skilled worker owned his own tools and probably his own home and a garden spot. When he was out of employment he repaired his own home.



Alexander Heron

"In such a discussion we might take up

AAA, wage-hour acts, social security, etc. Of the future one could discuss national defense and the handling of men called to the draft, conscription and other problems. Our own company has 3,800 men, of some 12,000 or 15,000 subject to the terms of the draft. We have to face the necessity of replacing those called and of seeking replacements in the face of the knowledge that they will lose their jobs when the regulars return.

"A new element is the boys to train for a year. They must shoulder new responsibilities when they return. They will be the new national leaders. We shall see a change of philosophy and thought on their part when they return.

"Most problems have their origin not in the actual field but in the philosophy of groups. On the Pacific coast we had only one sit-down strike but we have had plenty of labor grief. The strike did not succeed but it held up a port for some time. Strikes, like war, never pay. Everyone loses."

War's Effect on the Metals

The final convention session was devoted to a symposium on prospects for the metals and a discussion of the future of gold.

Reviews of the war's effects on supplies, international movements, and



Stanley A. Easton,
Chairman of the
Session on Labor
Problems



H. E. Treichler,
Chairman of the
Session on Pros-
pects for the
Metals

domestic markets and prices were presented for the lead, zinc, iron ore, mercury, and tungsten industries.

In a joint paper prepared by E. R. Dondorf and Jean McCallum of the National Lead Company, read by Mr. McCallum, it was predicted that the defense program will create a heavy demand for lead but it was pointed out that American mines are geared to meet the demand without skyrocketing of prices.

The writers reviewed the activity of the lead market since the beginning of the Second World War. They stated that:

"The outbreak of hostilities abroad last year seemed to have revived memories of what happened in the first World War when the price of lead reached as high as 12c a pound in 1917. Chart readers and statisticians got busy and dusted off old graphs and records to see what happened then and assumed that history would probably repeat itself. But market conditions at present are just about as different from what they were in 1914 as the present blitzkrieg tactics are from those that prevailed in the preceding war.

"At the outbreak of the first World War in August, 1914, the price of lead was 3.90c New York, and at the end of the first anniversary the price



E. R. Dondorf

had risen to 5.25c. At the outbreak of the present war on September 3, 1939, the domestic price of lead was 5.05c, and at the end of the first anniversary it was down to 4.90c after having previously touched 4.75c. The reason for this divergent market trend is to be found in the changed world condi-



Jean McCallum

tions as far as lead supplies are concerned. In 1914, the United States occupied a prominent position as a world supplier of lead. This country produced in 1914 about 540,000 tons of lead,

whereas the world's entire output that year was only 1,272,000 tons, according to figures by the American Bureau of Metal Statistics. In other words, the United States in 1914 produced approximately 43 percent of the world's total. In contrast with that situation, the output by the United States in 1939 was 420,000 tons, whereas the world's output had risen to 1,900,000 tons, so that this country produced only about 22 percent of the world's total as against 43 percent in 1914. The obvious conclusion is that in the present war, the combatants instead of being dependent on the United States for their supplies have so much lead of their own, that not only are they self sufficient, but actually in possession of an exportable surplus."

The authors reported that the United States had imported 108,129 tons of refined lead in the first seven months of the current year, as against 1,736 tons in the same period of 1939. They also cited figures to show that in the same seven-month period our exports of refined lead had decreased from 66,651 tons in 1939 to 16,582 tons in 1940. They stated that no one can accurately predict what the future holds in store for the domestic lead market but forecast an encouraging outlook for the balance of the year.

Howard I. Young, president of the American Zinc, Lead, and Smelting Company, reviewed the zinc situation. He stated that during the past seven years production costs have been substantially increased by reason of higher wages and increased cost of supplies. Mr. Young pointed out that the zinc industry has responded remarkably well to the increased demands upon it in recent months,

"and with a continuation of prices sufficiently high enough to justify bringing in additional smelting capacity the production of the United States could be brought up to 800,000 to 825,000 tons per year within a six months period. If production in excess of this is needed then plant additions at heavy capital costs will be required.

"In addition to higher costs, we in the industry know that when the present conflict is ended, and requirements are on a normal basis that, unless we have adequate tariff protection which has always been necessary to sustain the zinc industry in a healthy condition, we will not be in position to meet foreign prices of slab zinc, and it is certain that large tonnages of foreign zinc will immediately be made available and offered in our market. These uncertainties cause the operators to move slowly in making heavy capital expenditures for increased production of zinc.

"The bottle-neck in the zinc industry is not supplies of concentrates, and in my judgment will not be so long as present world conditions prevail. If a bottle-neck should develop it will be a matter of smelting capacity.

"More recently there has been unusually heavy buying by zinc consumers, not only for their immediate needs, but also in anticipation of their expected requirements in 1941. This is a decided departure from normal buying procedure, and has resulted in a backlog of unfilled orders in the Prime Western division of the industry of approximately 90,000 tons. It is highly important that the consumer of zinc cooperate with the producer in every way possible to prevent any shortage of needed supplies in any part of the

industry. The zinc producers are cognizant of existing conditions and unless some unforeseen conditions develop all normal requirements will be available.

"It behooves everyone in the industry to work together in helping to meet the domestic requirements, and such increased demands as may be brought about through our National Defense Program. It is hoped that the officials in charge of the defense program will soon indicate to the industry such requirements as they anticipate, so that productive facilities can be made available to take care of this increased demand without creating an unsatisfactory situation with the domestic consumer. . . .

"Looking to the future, it is highly important to the zinc industry to keep the requirements of those individuals who are our customers under normal conditions, supplied to such an extent that it will not be necessary for them to look for substitutes, nor produce an inferior product on account of shortage of zinc supplies."

H. L. Pierce, vice president, Hanna Iron Ore Company, told delegates that expanded steel output for national defense arms and armament "would

hardly cause a ripple" in the United States iron ore production.

Pierce said a million tons of ore, representing one month's normal operation from one large Mesaba open pit in Minnesota, would be



H. L. Pierce

"in terms of steel, the equivalent of 10 large battleships, 100 auxiliary vessels including heavy and light cruisers, destroyers and submarines, with a couple of aircraft carriers for good measure. . . . The same tonnage of iron ore would build 20,000 heavy tanks, while the ore requirements for 50,000 air planes could be produced from one of the open pits in a few days."

Pierce pointed out, however, that the national defense program involves the building of munitions plants, factories, warehouses, storage tanks and munitions of all kinds. This is bound to be a large tonnage, and when taken with the normal increased demand in all lines of steel consumption attendant on general good business, it is only logical that we can expect near capacity production of the ore mines until this program is behind us.

"If there is an expansion in the steel-making capacity of the country, we repeat, that the Lake Superior region is developed and prepared at the present time, without expansion, to conservatively meet a 15 percent increase in demand, and from this point could keep pace with any reasonable increase in the steel-making capacity. In short, we are now equipped and prepared to furnish all of the ore the present furnaces can possibly melt with a comfortable margin of safety, which places us in a very enviable position in

these times when other industries affected by the national defense program are looking to large expansion programs."

Worthen Bradley, president, Bradley Mining Company, discussing mercury, said that the domestic production is taking care of United States needs and a portion is being exported. He pointed out that a high price for the metal quickly results in sufficient production for our own needs and a surplus for export.

He stated that from 1919 to 1939 we were able to produce only 55 percent of our apparent consumption, but that during the war years 1916 through 1918, "the price increased 128 percent and production 59 percent over the previous six-year period."

"The situation is even more marked during the present period. If we assume a \$180 per flask average price for this year, the price is up 132 percent from the 1934-38 period (I am throwing 1939 out of my calculations as it was a hybrid year, only partially affected by the war). Let us assume a 33,300 flask production for 1940 (on the basis of continuing the May and June 3,000-flask per month production till the end of the year; actually, I believe production will be somewhat greater than this). A 1940 production of 33,300 flasks is up 98 percent from the 1934-38 average.

"Comparing the two war periods, it is encouraging to note that while the percentage of price increase was approximately the same, the percentage of production increase is much greater at present. And our production, continued at its present rate, will exceed the 1916-18 average by several thousand flasks per year.

"How long can domestic producers stand the present pace? It can be immediately answered that they will stand it cheerfully, as long as high prices prevail. They would be even cheerier if they had some assurance that imports would be limited and that high prices would continue for a few years, and they would be disgustingly happy if they and the other strategic mineral miners were, in all fairness, given some exemption from the full force of the excess profits tax.

"Assuming that the producers get by somehow, how will the mines bear up under the increased rate of production? Again the answer is encouraging. The mines are producing over 3,000 flasks per month without having yet reached their full powers. Some will fall by the wayside, in fact some have already done so, but we have much to look forward to."

Charles H. Segerstrom, president, Nevada-Massachusetts Company, reported that the United States had a good position with respect to tungsten and that "we will not see a shortage nor the sky-rocketing of prices that was witnessed in the first World War; and, barring unforeseen incidents, it would appear that tungsten is stabil-

ized at the present prices.

"In an international way we have received shipments from South America and Portugal, in addition to those coming from Asia, and it is believed that considerable tungsten from China is shipped to the central powers, as the Chinese-Russian barter included tungsten commodities. . . .

"During the calendar year 1939 the United States Bureau of Mines reported that 4,287 short tons of concentrates containing 60 percent WO₃, or approximately 3,200,000 pounds of W. were produced and shipped from the mines in the United States.

"During 1940 the domestic production has remained fairly constant and prices firm, with an increasing demand for domestic scheelite.

"Early increased production is expected from at least two districts in the United States—one of them being the Bishop District, where a great deal of preliminary work has been carried on—the other is the Humboldt County, Nev., District, where a chemical plant is being erected to treat complex ores. During 1941 it is my opinion that if the demand and price continue firm, the domestic production will exceed 5,000 tons of concentrates."

"Gold—What of Its Future?" was the subject of an address by Thomas

M. McNiece, economist of New York City.

Mr. McNiece stated, "One cannot be very positive in answering the question concerning the future of gold without sticking his neck out so far that

he becomes very vulnerable from all sides."

He pointed out that for centuries past, man has struggled and died in the search for the yellow metal and now, with the golden stream flowing over our shores we are worried by the mere possession of it.

Owing to the world situation and the fact that nations are buying all the gold that can be produced it is very unlikely, the speaker declared, that the price of gold will be reduced.

"The favorable position of gold producers will end," McNiece said, "when any one or a combination of the following conditions come to pass:

"1. When worldwide physical demand for goods again overtakes



Chas. H. Segerstrom

supply—that is, when we get back to previous living standards; or

"2. When inflationary forces turned loose by continuing budgetary deficits and excessive national debts drive material and labor costs skyward.

"3. When major governments go broke (and most of them are approaching that point if they are not already insolvent)."

Fears now expressed about the future of gold, the speaker described as of three varieties:

1. Demonetization of gold by other countries;

2. Reduced value of gold on account of abnormally large stocks; and

3. Enlarged credit base that might bring a disastrous credit inflation.

An outline for domestic improvement of the situation was laid down as follows:

"1. Restore the control of our monetary policies to Congress where they are placed by the Constitution.

"2. Restore the convertibility of the paper dollar into gold at the present fixed price of \$35 per fine ounce, thereby eliminating the fear of future price juggling and freeing funds for long term investment. When this is done, the people who pay for the gold and to whom it belongs may possess it if they wish.

"3. Eliminate the bureaucratic barnacles that have recently attached themselves to the ship of state. Unless we can cut the reckless and unnecessary government expenditures and balance the budget, the towering national debt will wreck our monetary structure more completely than any external development with gold. The dangers within are far greater than those without.

"4. Eliminate the inconsistencies in economic, financial and social policies which neutralize results but hang a necklace of debt around our necks.

"5. And finally and above all restore confidence in the integrity of our country by casting off legalistic devices and class cleavage and making common honesty once more an attribute of the nation.

"If these things are done we may look forward with hope. If not, let each man look to his own preservation."

Mr. McNiece declared that having made hoarding or even owning gold a crime among its citizens, the United States government became the leading gold hoarder of all time. This, he declared, is a manipulative corner on the commodity of gold that has the evil effects usually associated with similar corners on copper, wheat, rubber or any other commodities. One point of difference is that no one can escape the results of the corner on gold because it affects our whole money structure.



Worthen Bradley



Thos. McNiece

Mr. McNiece charged that the greatest fear of gold-demonetization currently arises from the threat of Germany to outlaw gold in the present conflict.

"In this case, especially, we should be careful to substitute reason for hysteria. It is by no means certain that Germany can win this war. In the event that she does, she and none of her allies will be in any position to dominate the world and make all the rules of the game.

"Barter cannot be used as a substitute for gold and Germany does not prefer barter regardless of statements by leaders whose word has failed in the past. She adopted barter as a last resort, when her gold and foreign exchange reserves were exhausted. She was then driven into some hard bargains in her necessity for continuing her imports of raw materials. Through all her struggles to maintain these imports of foods and raw materials and when her barter deals were most numerous, she bent every effort to secure all the foreign exchange available, even at considerable domestic sacrifice in other lines. This would not have been necessary if barter was sufficient. As she has taken over one country after another, Germany has reached for nothing more quickly than for the gold and other financial assets of those countries.

"Technically, barter cannot work in this age unless we revert to living standards of many centuries ago. This in itself would promote revolutions all over the world. Even if it could be made to work, barter would require complete and unqualified multilateral cooperation throughout the world—a condition impossible to realize. International trade involving the exchange of goods of differing seasonal characteristics cannot be consummated under barter. Credits or settlement of international balances with gold are the only means of bridging these gaps and who is going to hold the bag under the former necessity? . . .

James Finch Callbreath

The Western Division of the American Mining Congress, meeting in the state he loved so well, desires to place on record its appreciation of the great service rendered to the Congress and to the mining industry by the late James Finch Callbreath.

As the first secretary of the Congress, Mr. Callbreath became responsible for the creation of its staff and in large measure for the initial shaping of its policy and destiny.

Genial, with broad perspective, thoroughly familiar with the mining industry and possessed of unusual skill as a publicist, Mr. Callbreath brought to the infant Congress exactly the qualities which were essential to the mature and successful development which it now enjoys.

He was largely instrumental in the creation of the United States Bureau of Mines in 1910.

After thirty years of devoted service as secretary followed by six years as secretary-emeritus, James Finch Callbreath has entered into his eternal rest, and as his co-workers in the field of the mineral industry, inspired by his example, we can best honor his memory by continuing the great work he initiated.

We deplore his passing and shall always revere his name. "We shall not look upon his like again."

"Pure barter is a relic of the past and it is a relic because it is obsolete—outmoded by more effective methods. And yet, it is possible to conceive of modern trade as partaking of the nature of indirect barter but only through the full utilization of gold. In its normal usage in international trade, gold is shipped only to settle the balances between countries created by trade and services of unequal values. The free operation of foreign exchange markets provides a place where international debtors and creditors meet, barter their obligations and settle the differences with gold. The only reason for differences is that obligations can-

not be made to balance by this barter. If balances are to disappear, somebody has to take less goods. The world has not yet produced a substitute for gold."

DECLARATION OF POLICY

A declaration of policy, comprising the views of the Western Division of the American Mining Congress on vitally important topics of public concern, was presented at the closing session on Thursday afternoon, September 19, by Donald A.

Callahan, chairman of the Resolutions Committee. The declaration was adopted unanimously, and will be found on pages 41 and 43.

A further resolution of regret over the passing of James F. Callbreath, for many years Secretary of the American Mining Congress, was adopted by a standing vote.

(Continued on page 44)



General view of the three exposition halls

A DECLARATION OF POLICY

*THE WESTERN DIVISION OF THE AMERICAN MINING
CONGRESS assembled in annual convention at Colorado
Springs, Colo., September 19, 1940, herewith declares its
views upon the following subjects of public policy:*

NATIONAL DEFENSE AND THE MINING INDUSTRY

The mining industry appreciates the necessity for rapid and complete preparation for national defense. It stands ready to contribute its full share, and pledges wholehearted and complete cooperation for the fulfillment of the program.

The basic objects of such a defense program are:

The preservation of the democratic form of government.

The maintenance of peace in the United States, and its protection against foreign aggression.

The guarantee that in the future our citizens may continue to enjoy the blessings of life, liberty, and the pursuit of happiness.

There is need for the rapid development of our defense program because we are living in a world at war. But there is no emergency so great that there should ever be any relaxation from common honesty, social justice, free consent of the governed, freedom of religion, free speech and press, and the free rights of petition and assembly, which are some of the foundations upon which our constitutional government is founded. Any deviation from these principles constitutes a threat to the nation which should be aggressively opposed. We condemn subversive activities of both foreign and domestic enemies who seek to take away these privileges from us or to sabotage our defense plans. We approve the work of the Dies Committee and urge its continuance. More drastic punishment should be provided for sabotage.

We reaffirm our belief that the state should continue to exist for the citizen and not the citizen for the state. National defense preparations tend to increase and expand Government activities into spheres not contemplated by its founders. Human liberties decrease and decay as governmental authority increases. Constitutional democracy has died in every nation that usurped the planning under which the citizens must conduct

their business. Hence only most unusual and special instances can justify further encroachment of government into the activities usually conducted by private business.

We recognize that world conditions now require the national government to expend huge sums for defense purposes, far in excess of possible income. Every possible means, therefore, should be used to increase the total income of our people and to keep ordinary expenses of the government at a minimum. No possible sources of revenue to the government should be strangled by confiscatory taxation, and every effort should be made to expand the ability of taxpayers to pay the huge sums that will be required for the immediate program and the obligations that it will bring in years to come.

The products of the mining industry are the foundation upon which modern defense programs must be built. In peace, in national preparedness or in war, minerals and metals are essential. Our country is blessed with an abundant supply which should not be depleted or destroyed by ill-advised action. Nothing must be done in times of stress and strain which will threaten the supply of minerals and metals in the future.

Mineral and metal production, like all other forms of productive effort, requires the coordinated work of capital, management and labor. None of these elements should be relieved of carrying its share in the present emergency.

We urge that the national defense program be entirely removed from either political or partisan considerations and that it be directed and controlled by industrial and business executives with power to act and to apply those principles of administration which have built a great nation. Emergency powers conferred by law either upon such executives or upon government officers should automatically terminate when the emergency ceases.

The United States should not be dependent upon for-

eign countries for its minerals and metals. To accomplish this we must maintain a balanced mining industry with provision for the discovery, development and operation of new mines. We urge special attention to the finding and preparing for production of the strategic and critical minerals which are necessary for national defense. Research to develop satisfactory substitutes for those which cannot be found in sufficient quantities to fulfill the nation's needs should be continued.

We believe that the creation of conditions which will make possible private financing and development in the same manner as our resources were originally developed—by capital, enterprise, industry and vision, with opportunity for reasonable profit—will provide adequate supplies and replacements of metal and mineral resources as rapidly as they may be needed.

We commend the intelligently conducted work of the United States Geological Survey and the United States Bureau of Mines in the survey and inventory of the strategic and critical mineral resources of the nation, and we urge a continuation and expansion of these activities to completion. We appreciate their scientific and technical approach to the problem.

We especially approve the constructive activities of the Bureau of Mines in mining and metallurgical research, health and safety, statistical compilations and in other fields, and we urge that this work be not hampered by adding police functions. The Bureau of Mines has always been a service organization, successful and helpful because of mutual cooperative effort and confidence built up over a long period of years. The confidence of the mining industry in the Bureau and its representatives might easily be destroyed if police powers, as proposed in the pending Mine Inspection bill, were added to its functions.

We urge continued stockpiling of minerals and metals from domestic sources for national defense and the purchase from abroad of only such metals and minerals as may be necessary until production in this country can supply the needed quantities at reasonable prices based on costs of domestic production.

Defense preparations, and the concentration of our thought upon them, tend to obscure the future, and the effect of the actions of today upon the conditions of tomorrow should be carefully considered. Our nation has developed through the exercise of certain fundamental individual rights and privileges. We must guard against their loss or impairment through Federal encroachment during periods of stress, either under the guise of national defense or otherwise. Whatever may be the requirements of today, it must be remembered that our economic welfare depends upon the encouragement of the initiative of the people and of the production of goods and services useful to a normal life.

This applies with marked emphasis in the mineral and metals industries, where risks are in excess of normal and therefore opportunities must be made reasonably attractive if individual initiative is to perform its part in preserving the kind of nation to which we are accustomed and in which we like to live.

The mining industry is prepared to cooperate and to

contribute, by hard work, self denial and sacrifice, essential requirements in the national defense program, and pledges itself to that end.

EMPLOYER-EMPLOYEE RELATIONS

Adequate national defense demands vastly increased productivity if we are to maintain our high standards of living. Our people must be united in the face of all the enemies of our American way of life. We must go to work more intensively. Neither employers, employees nor government can be permitted to hinder the development of the sinews of our national strength, whether for war or for peace. Let us heed the lesson of the tragic disintegration of France.

We believe in true collective bargaining, but we deplore the presumption by government that employees and employers constitute classes of people whose interests are necessarily antagonistic. We object to any governmental agency espousing the cause of either party to a labor dispute.

We assert that the proper and sole function of government in labor disputes is to act as conciliator, to afford fair, impartial treatment to employers and employees alike, and to hold them mutually responsible before the law for their actions. Better employer-employee relations are essential in the present national emergency.

We therefore urge that the Senate of the United States take prompt and favorable action on the Smith Bill amending the National Labor Relations Act.

The metal mining industry throughout its history has been singularly free from and opposed to sweatshop conditions at which the Fair Labor Standards Act is directed. However, the provisions of this act limiting hours of labor, as applied to the mining industry, are impractical and constitute a serious hindrance to efficient operation and full productivity. We therefore urge exemption of the industry from the maximum hours provisions.

TAXATION

The imperative need for national defense carries with it an equally imperative need for intelligent governmental financing. We face heavy initial expenditures to build up our defense equipment. Large additional expenditures will be required annually to maintain and support our defense forces. In the meantime we must continue to provide for the other requirements of our national budgets. This tremendous problem must be frankly faced. Long-term plans to meet it must be made.

We have previously gone on record as to the basic principles which in our opinion must underlie any sound long-term financial program. It seems worth while to restate these principles here. We believe in the enactment of a reasonably permanent revenue system based upon the policy that private employment provides the only permanent solution of unemployment; that private enterprise and initiative must be protected and encouraged; that increased industrial activity requires expansion and new enterprise; that the net return from new and venturesome enterprises must be

adequate to attract private capital; that private investment must replace government spending. Only under such policies can our revenue system produce maximum yields over a period of years; can the national income be sufficiently increased to provide adequate government revenues; can the Federal budget be relieved of heavy demands for unemployment relief and for extraordinary government spending. In no event should there be any increases in taxation or any further extension of the debt limit for any purpose other than national defense.

To insure the fullest response in the present emergency, a tax confiscatory in amount and discriminatory in application must not be imposed upon those who are asked to provide new capital with which to expand plant facilities, develop reserves of strategic minerals, and insure adequate production of basic raw materials required for arms, munitions and mechanical equipment. It is essential that emergency defense requirements be met, so far as possible, by private industry and with private funds.

We would approve an excess profits tax imposed on true excess profits, but we view with apprehension the apparent determination of the Treasury Department to impose heavy additional taxes, under the label of an excess profits tax, upon profits which are only the fair and reasonable normal earnings of industry. The existence of excess profits cannot be ascertained merely by reference to hard and fast rules such as the earnings of a prior period or a fixed rate of return on invested capital. It is absolutely essential that special circumstances be given special treatment on an equitable basis.

No revenue requirements, however urgent, can justify unfairness to taxpayers. Adequate revenue can be raised by fair and equitable taxation. We therefore urge as vital a more careful consideration by the Congress of the measure now pending before it and the improvement of that measure in the numerous respects pointed out to its Committees by the representatives of this and other industries.

CONGRESSIONAL CONTROL OF EXPENDITURES

Under present conditions it is vital that Congressional responsibility for expenditures should be united with Congressional responsibility for revenues. We again urge that each House of Congress create a Committee on the Budget including members responsible for appropriations and members responsible for taxation. This committee should give appropriate consideration both to the annual executive budget of estimated revenue yields and proposed expenditures, and to the long-term financial requirements. Based on its report, and after full debate, each House of Congress should then fix the maximum amount of expenditures for the year, and require that the separate appropriation bills and legislation authorizing appropriations conform to this determination. With the immense amounts now appropriated or authorized for defense requirements, it is urgent that extensive reductions be effected in other expenditures of government.

SECURITIES AND EXCHANGE COMMISSION

We urge that the Securities and Exchange Commission expedite presentation of the new simplified mining registration forms and exemption rules to the mining industry, for consideration prior to adoption; that the regulations relating to newspaper advertising and publicity of new offerings be liberalized; and that a ruling lessening the liability of the underwriter, as provided in an amendment passed in 1934 to the Securities Act of 1933, be immediately printed in full, publicized and distributed by the Securities and Exchange Commission.

We urge that the various states take action making exempt from their "Blue Sky" laws any and all securities that are fully registered with the Securities and Exchange Commission or legally exempted under the Securities and Exchange Acts.

* * * * *

WE REAFFIRM our faith in the following principles embraced in the declaration of policy of the Western Division of the American Mining Congress, dated August 31, 1939:

WATER POLLUTION AND MINE INSPECTION

Control of water pollution and mine inspection should be handled by the states rather than by the Federal Government.

PUBLIC LAND POLICY

We favor the long-established system facilitating development of minerals on public lands, and reasonable utilization of mineral deposits within existent or proposed national parks and reservations. We oppose the creation of any further public reservations or parks in the United States or Alaska, unless the prospecting and mining rights of citizens therein are preserved and protected.

MONETARY POLICY

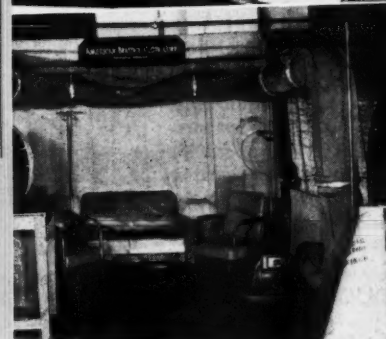
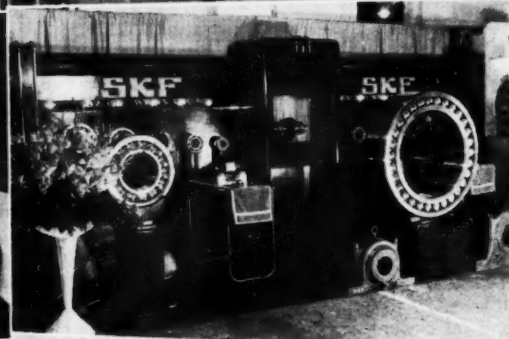
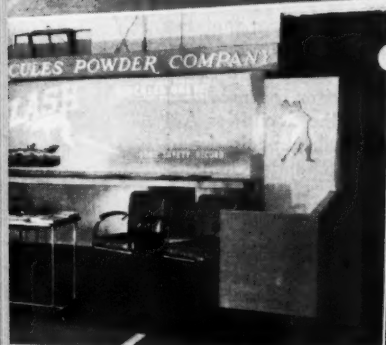
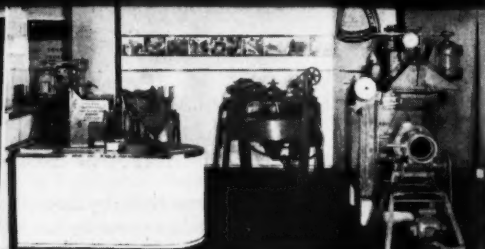
We favor a currency with a metallic base, using gold and silver. We endorse the continued purchase and coinage of domestic gold and silver, as provided by law, and urge the repeal of the prohibitions on free circulation of gold.

TARIFF

The Reciprocal Trade Agreements policy has been a handicap to the domestic mining industry. Trade agreements are in fact treaties and should be ratified by the Senate.

ST. LAWRENCE WATERWAY

We oppose any action on this project pending thorough investigation of the enormous cost and doubtful benefit to American economy.



A cross-section of the exhibits

THE EXPOSITION

The exposition of mining and milling equipment was again a feature drawing card of this annual gathering. Sixty-three leading manufacturers were represented with colorful exhibits which drew widespread interest from all mining men present. The industry's operating men and executives took full advantage of this occasion to study and inspect, at a central point, the large variety of machinery and supplies available as an aid in conducting all phases of their operations.

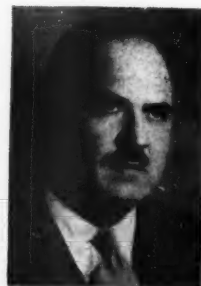
Exhibitors were enthusiastic in their comments over the contacts made during the week. Both manufacturers and mining men were in accord that this annual opportunity for informal discussion of the industry's equipment and operating problems was mutually advantageous and that discussion of practical operating matters should be further developed in future programs.

Exhibits ranged from large units in operation, equipment and plant models, to moving pictures and photographic displays. Manufacturers' representatives were on hand and willingly answered the many and sometimes difficult questions presented to them.

ENTERTAINMENT

Record attendance at the entertainment functions attested to the popularity of the evening's events, and was an appropriate testimonial to the tire-

less efforts of the Colorado Springs committees in providing a pleasant week for the convention visitors.



Merrill E. Shoup

Welcoming Luncheon—A welcome filled with the warmth of the West's friendliness was tendered delegates Monday noon at a gathering in the main dining room of the Broadmoor Hotel.

With Merrill E. Shoup, chairman of the Western Division, presiding, those present received greetings from Governor Ralph L. Carr, of Colorado. Governor Carr emphasized the importance of mining in Colorado and invited all present to make themselves



J. C. Kinnear



A. S. Knoizen

at home in "the capital of the mining industry of the West."

Appropriate responses were made by Howard I. Young, President of the American Mining Congress; J. C. Kinnear, chairman of the Program Committee; and A. S. Knoizen, chairman of the Manufacturers' Division of the American Mining Congress.

Motion picture—Early Monday evening delegates assembled in the Little Theater of the Broadmoor Hotel for the showing of the sound motion picture—"Arizona: Its Mineral Resources and Scenic Wonders." This film, prepared by the United States Bureau of Mines, depicts in striking manner the importance of mining in one of the great southwestern states.

Informal dance—Subsequent to this, delegates and ladies filled the beautiful Hawaiian Village Nite Club at the Broadmoor Hotel for a get-together evening of dancing and entertainment. The floor show led by Bill Roberts' Orchestra featured the Claire Denne Dancers; the Two Kings, an acrobatic speciality; songs by Betty Brown and Paul Kwartin; the dancing skill of Faye and Andre, and the magic stunts of Paul Fox. In addition, the nationally known Cheyenne Mountain Dancers carried out a series of graceful oldtime dances on an outside platform underneath a gorgeous full moon.

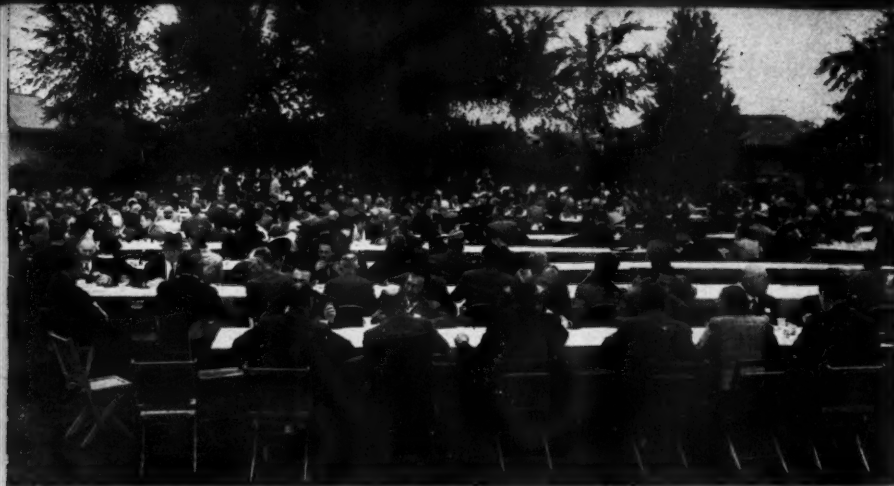
Myron Stratton Home Luncheon—Convention visitors were extremely fortunate this year in being conducted through the famed Myron Stratton Home, where they were tendered a luncheon on Tuesday noon. David P. Strickler, president of the



David P. Strickler

OCTOBER, 1940





Luncheon at Myron Stratton home

Stratton-Cripple Creek Mining and Development Company, who presided, explained the founding of the Home and its objectives, following which Dr. R. R. Sayers, Director of the U. S. Bureau of Mines, addressed the gathering on the work of that bureau.

Indian Harvest Festival—To many, the highlight of convention week fun was Tuesday evening on the rugged slope of Cheyenne Mountain. Following a

delicious outdoor steak fry with all the trimmings, delegates were treated to a topnotch entertainment. From elevations on the mountain side, Indian Princess Ruth Montgomery and Chief John Bissell sang a number of enchanting selections, including old favorites from "Rose Marie." Radio's popular quartette, "Men of the West," captivated the crowd with their Western songs, as also did Merv Rutledge and Dorothy Bergen in several song specialties.

Ice Carnival—"Gold Camp Gaieties" rang the bell as a striking and unusual convention evening on Wednesday. With the Broadmoor Ice Palace filled to capacity, an internationally famous group from the skating world "brought down the house" with their exhibitions of skill and grace. The star-studded cast included Maribel Vinson, Guy Owen, Douglas Duffy, Edi Scholdan and many others.

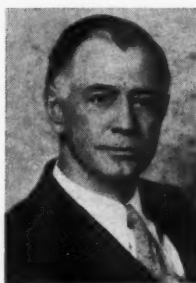
Annual Banquet—Appropriately climaxing the week's activities was the annual banquet held in the Broadmoor Hotel, Thursday night, attended by some 600 delegates and ladies and pre-

sided over by Toastmaster Robert M. Hardy, president of the Sunshine Mining Company.

Mr. Hardy presented a message of greeting and cheer for the future from Senator Key Pittman, who was to have been the speaker of the evening, but whose legislative duties prevented his attendance.



R. M. Hardy



Sen. Key Pittman

John T. Haney, attorney of Colorado Springs, rendered a humorous speech entitled "Brief in Defense of a Lazy Man," in a Southern accent and with a spar-

klung wit which captivated the crowd.

Following his address, delegates enjoyed the antics of the cockney-accented Pat O'Malley, famed radio and night club entertainer, popularly known as the "Lancashire Lad." Elsa Kanerz, soprano; the KOA Octette, and Milton Shrednik rounded out the evening's program—one which will be long remembered.

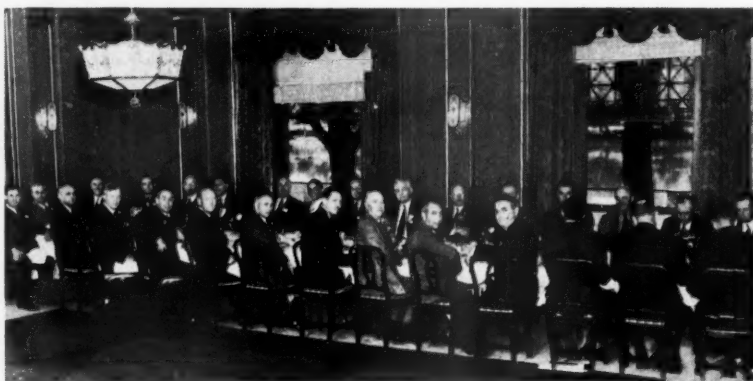
LUNCHEON MEETINGS

A luncheon meeting of the Executive Tax Committee of the American Mining Congress was held Wednesday noon, September 18, at which discussion centered about current tax problems of the industry, and particularly the pending Excess Profits Tax Bill. Unfortunately, Chairman Fernald of the committee and some of the staff members of the Mining Congress were not able to attend, due to the necessity of remaining continuously in Washington in connection with the progress of this legislation.

On Thursday, September 19, a joint luncheon meeting of the Board of Directors of the American Mining Congress and the Board of Governors of the Western Division was held. At this meeting the following were elected to the Western Board of Governors for the coming year:

Alaska—Roy B. Earling, general manager, Fairbanks Exploration Dept., U. S. Smelting, Refining & Mining Co., Fairbanks; P. R. Bradley, president, Alaska Juneau Gold Mining Co., San Francisco; Luther C. Hess, president, Alaska Miners Association, Fairbanks.

Arizona—P. G. Beckett, vice president, Phelps-Dodge Corporation, Douglas; T. H. O'Brien, vice president and general manager, Inspiration Consolidated Copper Co., Inspiration; Charles F. Willis, secretary, Arizona Small Mine Operators Association, Phoenix.



Luncheon meeting, Western Division Board of Governors and Board of Directors of the American Mining Congress

California—Worthen Bradley, president, Bradley Mining Co., San Francisco; E. B. DeGolia, president, Gold Hill Dredging Co., San Francisco; Robert Linton, consulting engineer, Los Angeles.

Colorado—Wm. J. Coulter, general manager, Climax Molybdenum Co., Denver; J. Price Briscoe, president, Clear Creek-Gilpin Co., Idaho Springs; Robert S. Palmer, secretary, Colorado Mining Association, Denver.

Idaho—Ross D. Leisk, general manager, Sunshine Mining Co., Kellogg; Irvin E. Rockwell, general manager, Minnie Moore Mine Developing Co., Bellevue; J. W. Gwinn, secretary, Idaho Mining Association, Boise.

Montana—Wm. B. Daly, consulting engineer, Anaconda Copper Mining Co., Butte; Francis A. Thomson, president, Montana School of Mines, Butte; Carl J. Trauerman, president, Mining Association of Montana, Butte.

Nevada—J. C. Kinnear, general manager, Nevada Consolidated Copper Corporation, McGill; Fred E. Gray, general manager, Desert Silver, Inc., Silver Peak; Henry M. Rives, secre-

tary, Nevada Mine Operators Association, Reno.

New Mexico—Horace Moses, general manager, Chino Mines Division, Nevada Consolidated Copper Corporation, Hurley; Ira L. Wright, general manager, Black Hawk Consolidated Mines Co., Silver City; A. S. Walter, president, New Mexico Miners & Prospectors Association, Socorro.

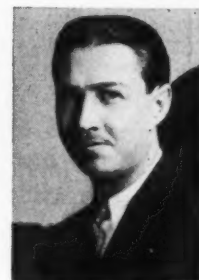
Oklahoma—John A. Robinson, director, Eagle Picher Mining & Smelting Co., Miami; C. F. Dike, manager, Oklahoma-Interstate Mining Co., Treece, Kans; Evan Just, secretary, Tri-State Zinc & Lead Ore Producers Association, Picher.

Oregon—D. Ford McCormick, Sterling Mines, Inc., Medford; Samuel H. Williston, vice president, Horse Heaven Mines, Portland; F. Whalley Watson, secretary, Oregon Mining Association, Portland.

South Dakota—Guy N. Borge, vice president and general manager, Homestake Mining Co., Lead; C. E. Dawson, general manager, Bald Mountain Mining Co., Trojan.

Texas—J. D. MacKenzie, manager,

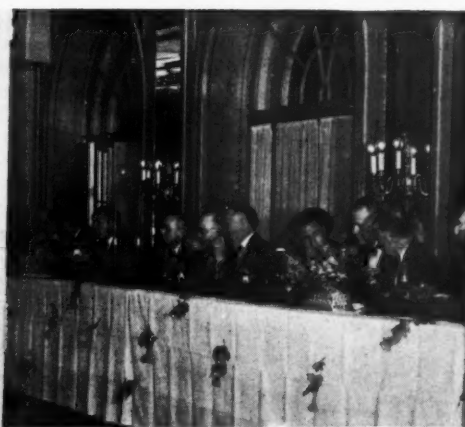
Robert S. Palmer,
Secretary of
Colorado Chapter,
American Min-
ing Congress



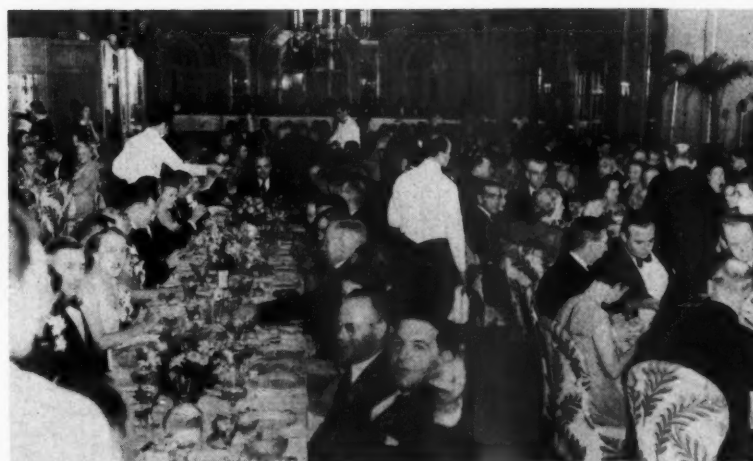
Southwestern Department, American Smelting & Refining Co., El Paso; H. E. Treichler, general manager, Texas Gulf Sulphur Co., Newgulf.

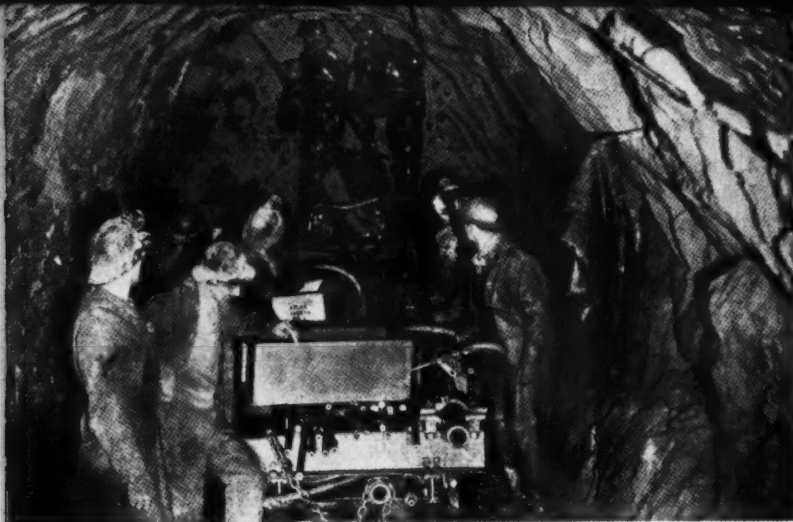
Utah—James W. Wade, vice president, Tintic Standard Mining Co., Salt Lake; Gloyd M. Wiles, vice president and general manager, Park City Consolidated Mines Co., Park City; A. G. Mackenzie, secretary, Utah Chapter, A. M. C., Salt Lake.

Washington—John J. Curzon, manager, Chelan Division, Howe Sound



Views of the annual banquet, climax of the convention week's entertainment program





Underground Scene at the Carlton Tunnel

warmly congratulated on their fine work which assured their guests such an enjoyable stay while in Colorado Springs.

TRIPS

Friday, September 20, was devoted to field trips and a sizeable group made visits to important mining and metallurgical operations near Colorado Springs. Special trips for smaller parties had also been arranged during the week, through the courtesy of the managements of these enterprises.

On Friday, conventioners boarded special busses and visited the Golden Cycle Mill, the largest custom mill in the world; the Minnequa plant of the Colorado Fuel and Iron Corporation at Pueblo, the largest steel plant west of Chicago; the mine and mill of the Climax Molybdenum Company; and the world-famed Carlton Tunnel. En route to the Climax properties they enjoyed a scenic drive through Leadville and other historic mining districts, and in going to the Carlton Tunnel they passed through the famous Cripple Creek mining district, producer of \$500,000,000 in gold.

Co., Holden; Jens Jensen, treasurer, Pend Oreille Mines and Metals Co., Spokane; C. O. Dunlop, president, Northwest Mining Association, Spokane.

LADIES ENTERTAINMENT

In addition to attending the splendid evening functions, the great number of ladies attending the convention with their husbands enjoyed numerous sightseeing trips arranged by the ladies' committees. Included in the trips were visits to South Cheyenne Cañon, Seven Falls, North Cheyenne Cañon, the Broadmoor residential sec-

tion, Colorado College, the Garden of the Gods, and Williams Cañon. The Pike's Peak area abounds in beauty spots, and the ladies were given opportunity for the fullest enjoyment of these world-famous scenic attractions.

Wednesday morning the ladies had breakfast at Cheyenne Mountain Lodge and visited the Will Rogers Memorial Shrine of the Sun, built by the late Spencer Penrose. On Wednesday afternoon they attended a tea and viewed exhibits at the Fine Arts Center. On Thursday a breakfast bridge was held at the Cheyenne Mountain Country Club.

The ladies' committees are to be

Cripple Creek, Colo.



THE NATIONAL LABOR RELATIONS BOARD†

IT IS with deep appreciation of the honor conferred upon me by the invitation to address you that I rise to speak to a body of men representative of a vital industry and one which might be described as the backbone of the all-important preparedness program in which we are all, capital and labor, management and employes, so deeply interested. At a time such as this, when every effort is being directed towards the attainment of a sound and invulnerable national defense, cooperation among all classes of our citizens is essential. So too is it important that in the interests of efficiency we do not sacrifice democracy. The constitutional safeguards must be maintained and governmental absolutism must be held to a minimum.

The main topic of my address is the National Labor Relations Board and the Wagner Act. The field of employer-employee relations is one attended with the gravest consequences if in the present crisis we are to maintain our democracy and insure cooperation, and thus attain the purposes of our country's defense program. But before I take up the particular subject of the Wagner Act and the National Labor Relations Board, I feel that it might be well at this time to give a background of the problem, the legal problem, of the administrative agency, because it is in this field of the law that in recent years centralization of government has reached a point verging upon administrative absolutism, a concept and objective entirely foreign to our American system.

Agency Legal Problems

As you know, the fundamental guaranties of the democratic process have their root back in an early period of Anglo-Saxon law. Our constitution invented a complex system of checks and balances that our founding fathers

thought desirable and necessary in order that governmental tyranny might never exist in our country. Among English-speaking peoples the proudest boast has been an independent judiciary, free from political influence and dedicated to the proposition of equal justice in a government of laws. However, in recent years this independence of the judiciary which has made the courts the champions of democracy and the guardians of liberty, has been whittled away, slowly, it is true, but none-the-less substantially. This has been accomplished by the building up of what might be called a fourth branch of government, whose powers are vested in the various administrative agencies in Washington. As a consequence of this development of the administrative process we find today that more and more the function of deciding disputes between man and his government has been vested gradually in these quasi-judicial agencies of government, leaving to the courts only the function of deciding disputes between one man and another.

It is not a wise thing to allow government, through political agencies, to exercise the power of deciding and adjudicating disputes to which it is a party. The reason for this is obvious. The prosecutor and judge, in our American system, exercise entirely irreconcilable functions. Through a long period of history in England and in this country the courts have managed with great difficulty to preserve their independence; but now in a substantial measure they are being stripped of their powers, and these powers are being vested in Federal agencies.

In the days of Lord Coke, a shining light in the history of Anglo-Saxon jurisprudence, the judiciary in England was more completely independent than it has ever been since that time. Lord Coke had not minced words in declaring that where an Act of Parliament be contrary to the organic or basic law of England he would not hesitate to call it unlawful and refuse to enforce it. It was this ideal of an independent judiciary that led to the in-



By EDMUND M. TOLAND
The District of Columbia Bar*

corporation into our constitution of the third article by the founders of this government. Our Constitution definitely insured the independence of the judiciary so that it would not be subservient to either the executive or the legislative. In this country, Mr. Chief Justice Marshall developed the concept of judicial review in his far-reaching decision in the case of *Marbury v. Madison*. During the period of John Marshall's incumbency, the Supreme Court of the United States achieved a fundamental position in the American political scheme, and ever since that time it has safeguarded the Constitution from frontal assaults and oblique attacks by the legislature or the executive. Yet so flexible is the nature of our Constitution that its workability is demonstrated by the fact that comparatively few amendments have had to be adopted since the republic came into existence.

But eventually the door was opened for a new type of adjudication—the quasi-judicial determination of cases. *Smythe v. Ames* marked this new departure, the first instance of self-denial by the judiciary, where we had a refusal by the high court to review the facts ascertained by an administrative body, and such a ruling seemed perfectly reasonable at the time. It seemed to be no more than any appellate court would do in respect to the record of a case decided by a court of nisi prius jurisdiction. But the administrative tribunal is not truly a court, as we have since learned to our profound sorrow and regret, for where "judge, jury and prosecutor" are one and the same, and where the trial agency in a court has "two strikes on the de-

† Presented to the 7th Annual Metal Mining Convention and Exposition of the American Mining Congress, Western Division, Colorado Springs, Colo., September 19, 1940.

* Formerly General Counsel to the Congressional Committee investigating the National Labor Relations Board.

fendant" before hearings begin, the impartial flavor of a judicial proceeding is lost, and with it the confidence of the people in the integrity of administrative bodies.

Parenthetically it might be remarked here and now that the Congress has given consideration to remedial legislation affecting all of these administrative agencies. This legislation, known as the Logan-Walter Bill and recommended by the American Bar Association, has passed the lower House. Demand for legislation of this type of safeguard respondents and insure them of a fair hearing before administrative agencies has come from lawyers and laymen alike. It remains to be seen whether or not the Senate will take action on this bill.

Growth of Administrative Agencies

The earliest example of a Federal administrative agency worthy of the name is the Interstate Commerce Commission, which was created by the Interstate Commerce Act of March 3, 1887. The purpose of this legislation was to remedy the unfortunate situation the railroads had brought about by taking advantage of the farmers and the small business men to an unconscionable degree. Secret rebates, undue advantages, preferential rates, and various other abuses on the part of the railroads created a demand for regulatory legislation. Here, perhaps, was a legitimate field for administrative intervention. The necessity for experts to determine the essentials of rate making or the ascertainment of a fair rate where a monopoly is concerned may not be doubted today, for these investigations are investigations of a nature requiring scientific measurement—computations involving mechanical skill. In fact, the one justification for the use of the administrative process of having boards and commissions set up for the administration of justice is that in certain fields men especially trained for the work can do the task better and more wisely than it could otherwise be done even by the courts. The argument is somewhat persuasive, but in fact its validity has not been borne out by the evidence. So-called experts in the social sciences, labor, economics, sociology, etc.—they remind me of the definition of expert current in Washington right now—"An expert is a man who is constantly learning more and more about less and less until he knows all about nothing and gets paid for it." And that is the type of expert, so-called, who infests some of the newer and more crack-brained admin-

istrative agencies, that in my opinion offers a serious threat to our democratic foundations. The courts, for so many years essential bulwarks of constitutional guarantees, affording the individual citizen a positive protection from the unbridled encroachments of his government, have been relegated to a mean and unworthy place by the substitution of administrative bodies whose unchecked usurpation of power, whose willful trampling underfoot of cherished rights can only lead to our ruin. Ever since the establishment of the Interstate Commerce Commission in 1887 there has been a steady increase in number and type of Federal administrative agencies, an increase that has been accelerated considerably during the last seven years, so we find ourselves now, as one author puts it, with, "the Interstate Commerce Commission, which more and more governs transportation and travel; the Federal Reserve Board, which more and more governs banking; the Securities Exchange Commission, which tries to govern all our investments; the Federal Trade Commission, which tries to govern the marketing of our manufactures; the National Labor Relations Board, which interferes in the making of these manufactures; the Reconstruction Finance Corporation, which taxes all of us to lend to whom it thinks fit; and the Tennessee Valley Authority, which taxes all of us to make over that valley according to the hopes of a few gentlemen's hearts."

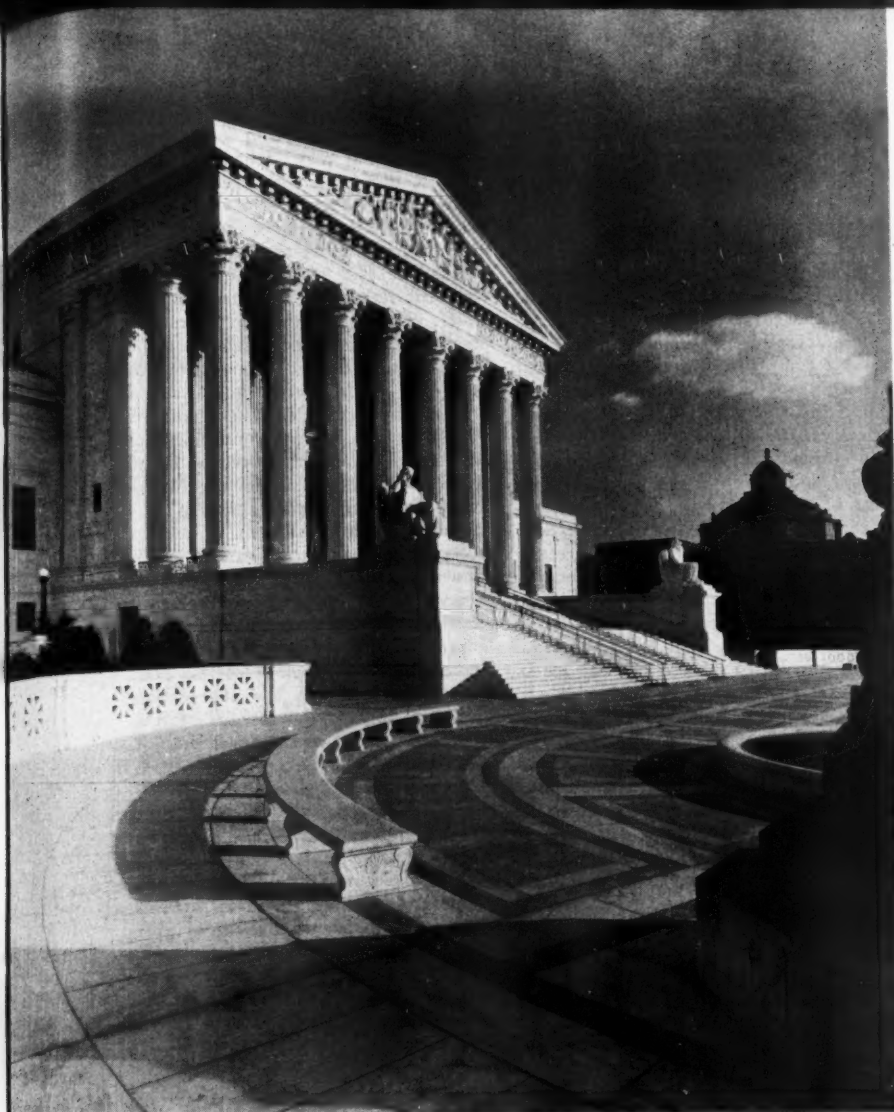
N. L. R. B. Investigation

I have felt it desirable to sketch in roughly some idea of the broad field of the administrative process because the National Labor Relations Board is but a part of that general pattern. Specially created by the Act of July 5, 1935, as a successor to the old Board created under Public Resolution No. 44, it has from the very outset of its career aroused outspoken criticism, not merely from one quarter, as might be supposed, or as its apologists would have you believe, but from all classes and conditions of society, organized labor as well as capital. Therefore, in view of the unceasing storm of criticism the Congress decided to determine for itself whether or not there was any basis for this criticism. Accordingly the Special Committee to Investigate the National Labor Relations Board was established, under House Resolution 258, with Howard W. Smith, of Virginia, as chairman, and numbering five members, two Democrats and two Republicans, in addition to its chairman. The preliminary spade work for this investigation was undertaken early

in the fall of 1939, after my appointment as general counsel. Hearings began on the 11th of December and continued intermittently up to the last month. When it is realized that testimony and exhibits amounting to millions and millions of words, and filling over 26 volumes, resulted from these hearings, you must understand that it will be impossible for me to do any more than touch upon a few of the highlights at this time. The Intermediate Report filed by the Committee last spring, even before hearings were concluded, paints a shocking picture of bias, prejudice and incompetency on the part of the Board and its employees. The entire record of our investigation of the National Labor Relations Board is, to my mind, an important public document. It was not made on hearsay, nor does it contain merely charges and countercharges. Investigation was carried on with a close adherence to the tried and true legal principles of evidence and proof.

Extra Legal Activities of Board

A summary of the evidence adduced at these hearings is a shocking indictment of public officials who are sworn to uphold the Constitution of the United States in the performance of their duties. In their administrative practices the Board members themselves have been shown to have been guilty of blacklisting, a practice which they themselves are the first to condemn when industrialists are the guilty parties. This blacklisting consisted of attempts to prevent the issuance of Government loans and the granting of Government contracts to companies allegedly violating the Wagner Act, even before these companies had the opportunity of a fair hearing as guaranteed them in the Constitution. Such a practice is without warrant of law and there is no authority contained in the Act for any such sanctions. One Board member even went so far as to assist a union involved in a labor dispute to the extent of asking an officer of a large department store to use his good offices to bring about a settlement of the controversy—and this at a time when there were no formal charges pending before the Board, and despite the fact that the Board is prohibited from engaging in mediation or conciliation. The same Board member, Edwin S. Smith, in the course of the same controversy, transmitted to the same department store official union literature urging a boycott on the products of the manufacturer. Despite such a one-sided interest in the con-



Supreme Court

—Harris & Ewing

trovery the same man did not hesitate when, after charges had later been brought and a hearing held in connection with this labor dispute, to participate in a decision finding the manufacturer guilty of a violation of the Wagner Act, and saw no impropriety in so doing.

A tremendous volume of testimony was adduced during the hearings before the Smith Committee to demonstrate that the members and the employees of the National Labor Relations Board engaged actively in lobbying activities whenever the act which they were charged with administering was threatened with amendment, or when their appropriations were seemingly in danger of being cut. Such an activity on their part constitutes in all likelihood a violation of the criminal code of the United States, yet thus far the Attorney General has not seen fit to prosecute. In this connection it might be

said that the vice of this lobbying activity as undertaken by the Labor Board goes even farther than active efforts on behalf of the act and appropriations. The Board and its members even went so far as to endeavor to stir up opposition by local unions of the American Federation of Labor to amendments which had been proposed and approved by the executive council of that organization. All labor unions were actively solicited by the Board to apply pressure in behalf of the Act. It is these same unions who are actual or potential parties to cases arising under the Wagner Act. Consequently, the Board undertook to obligate itself to those unions who might assist it. Such an obligation could have but one result, namely, in intensification of prejudice and bias on behalf of these unions whenever a case in which they were interested arose before this tribunal.

Another astounding episode was one in which the secretary of the Board—the most important administrative official of the agency, with the knowledge and consent of the Board, undertook to confer with important officials of the Congress of Industrial Organizations and to advise with them in the selection of a case that would test the principle of whether or not an agreement entered into as a result of collective bargaining between an employer and his employees must be in writing. From the testimony it appeared that the secretary, at that time an assistant general counsel of the Board, had had these conferences prior to the actual filing of any charge against this company. And had even gone so far as to discuss the advisability of using one particular company rather than another as the guinea pig. Such activities at common law would amount to what is known as entrapment and would constitute a serious offence against law and justice.

I could continue on with other incidents of like nature. The record is replete with such unwarranted and extra-legal activities on the part of the present Board and its employees. However, it is not only in these extra-legal fields that the Board has been guilty of acts which would destroy the faith of the public in that agency; it has been equally unscrupulous in the exercise of the specific functions allotted to it under the Wagner Act.

Two of the Board members testified that the Board was not bound by the statutory language of the Act but could undertake to invent remedies not specifically provided for by law. All this in the face of the fact that it is axiomatic in the law that all statutes enacted in derogation of the common law must be strictly construed. However, this question of inventing remedies, examples of which are set forth in detail in the Intermediate Report of the committee, goes far beyond a mere statutory construction. It assaults the very cornerstone of our Government, for this invention of remedies is legislation simple and undisguised legislation, by an administrative body, an offshoot of the executive. Yet constitutionally, only the representatives of the people, responsible to them, namely the Congress of the United States, has that power. The Board, acting under its function of insuring the right of workers to bargain through representatives of their own choosing, has seized upon what is known as the appropriate bargaining unit in such a manner as to actually defeat the purpose of the act by depriving large labor unions of valuable

property rights by vesting the appropriate bargaining unit in such a manner that the workers employed in individual companies in certain instances are deprived of the right to be represented by the union of their choice but must be represented by another and favored union. The Board itself, is guilty of setting at naught the restrictions, and there have been few, placed upon it by the Supreme Court's interpretation of its powers. Perhaps you are familiar with the wave of sit-down strikes which had a paralyzing effect upon many of the industries of our country not so long ago, and created ill-feeling, havoc and bloodshed in various communities.

The Labor Board undertook to order sitdown strikers to be reinstated to their previous employment. In the now famous *Fanstel* case the Supreme Court of the United States severely censured the Board for such an order, and yet even after that decision the Board attempted to defend a similar type of order before one of our Circuit Courts of Appeal. For such obvious duplicity the court criticized the Board in the following words:

"we think the insistence upon this appeal is a disservice to the best interests of the labor movement and so a disservice to the national life of which it is such a vital part."

Such an attitude on the part of officials charged with administering laws devised by Congress in the interests of the common good, is but characteristic of an attitude and a philosophy underlying this administrative agency. We need only examine the words of Dean Landis, the foremost exponent of this new streamlined form of administrative absolutism, who is very definitely of the opinion that some administrative agencies are set up to be, and are intended to be, partial. I submit that Congress never had any such idea in mind when it passed the measures establishing these administrative agencies. Justice is never founded upon the partisan zeal of judicial officers.

Mining Cases Cited

As an example of this partisan zeal, bias and prejudice, let me trace briefly the history of a case involving one of the large mining companies of this country. This is the case of the *Eagle-Picher Mining and Smelting Co.*, and the *Eagle-Picher Lead Co.* The case had its beginning back in October of 1935, only three months after the passage of the National Labor Relations Act. Our record discloses considerable interest in the labor affairs of this company on the part of certain Board

officials, namely the regional director and his regional attorney in the Kansas City regional office, who undertook an investigation into contemplated charges several months before charges were actually filed by the union. And this despite the fact that the Board's jurisdiction does not attach in any case until charges have been filed. Charges were actually filed in March of 1936 and a complaint was thereafter issued charging the *Eagle-Picher Mining and Smelting Co.* with unfair labor practices. However, the case was halted by an injunction issued by a Federal court, so that it was not until November of 1937, after the injunction was dissolved, that the Board proceeded. In the meantime the regional director of the National Labor Relations Board, who had shown an extreme interest in the case at the beginning, had been promoted to a position in Washington with the Board, where he was made chief trial examiner in charge of all the trial examiners of the Board. These trial examiners are the men who actually hold the hearings and their function is purely judicial. They preside over the hearings, build the record, file an intermediate report setting out statements of fact and conclusions of law. Yet this same chief trial examiner undertook to advise the trial examiner who was designated to hear the case concerning the exclusion of certain evidence offered by the Board's attorney, one William Avrutis. Avrutis carried on lengthy correspondence during the course of the hearing with the chief trial examiner, although under the administrative setup of the Board the prosecuting function, performed by Avrutis in this instance, and the judicial function, as represented by the trial examiner, were supposedly distinct and separate. Such statements as these are contained in letters written by the Board's attorney to the chief trial examiner:

"Well, George, the preparation of the *E. P. (Eagle-Picher)* case goes on apace, and with gleeful malice. . . . We can go ahead on a strictly factual basis or fry one malefactor at a time."

"So Woods (who had been expected to be the trial examiner) won't be here. Well, I know you will do your best by me and the situation. Can you tell me when he is due here and where he will stay. I should like to put into his hands beforehand the set of marked pleadings I have cooked up for him."

How can one be assured of a fair trial on any charges when such correspondence as this passes between the chief prosecuting attorney of the case and the highest judicial officer of the Board, and this even before the case ever came to a hearing. This same trial examiner to whom these letters were addressed at one time gladly

accepted the description of "judge, prosecutor and jury" when he was a regional director in the Kansas City office of the Board. He also told a group of trial examiners while he was chief trial examiner that he had "two strikes on the respondent in every case that starts." Case after case, incident after incident could be multiplied to demonstrate the fact that the Board operated in such a manner as to have the cards pretty well stacked against any respondent, yet most of these men occupying key positions are lawyers, and well acquainted with the fundamental theory underlying American jurisprudence, that a man is presumed innocent until he is proven guilty. The *Eagle-Picher* case to which I have referred demonstrates still another weapon that has been reposed in the hands of these administrators. The lengthy litigation and delay, as evidenced by the chronology of this case, shows that although the charge was filed originally on the 26th of March, 1936, the decision of the Board did not issue finally until December of 1939. However, in all fairness it must be admitted that the delay between the time of the filing of charges and the 27th of May, 1937, the date the injunction was dissolved, was occasioned by the injunction proceedings. Even so, this means that there was a delay of over two and one-half years in this case. This matter becomes extremely important in that the back pay order contained under the Board's decision amounts to a staggering sum, variously estimated by the Board and respondent's counsel as from \$125,000 to in excess of \$1,000,000. This was another instance in which one mining company, too, was picked out to be more or less of a scapegoat, because the regional director in April of 1936 advised that the Board proceed only against the *Eagle-Picher Mining Co.* although some 50-odd other companies in the tri-state area had been charged with like offenses.

Certain other cases involving mining companies were mentioned during the course of the hearings of our Committee. In one case involving the *Atolia Mining Company* the trial examiner testified that he discussed the case with the Board's attorney—another mingling of the prosecution with the judicial. It occurs to me that in speaking of these mining cases it might be well to revert back to what I said at the opening of my address, namely that the jurisdiction of the courts has been, to a great extent, decreased by the gradual usurpations of these administrative tribunals. This is particularly borne out by court decisions in-

volving mining companies and the National Labor Relations Board. One of the early court decisions concerning the jurisdiction of the Board over mining companies was that of the Ninth Circuit in the case of *N. L. R. B. v. Idaho-Maryland Mines Corporation*. It seemed to indicate at the time that this was one form of industry in which the Board would have difficulty establishing jurisdiction. There the court felt that despite the fact that the respondent's supplies and equipment originated outside of the State of California, in which State the mining property was located, and were large and annual purchases, the National Labor Relations Act did not apply.

The court's view was strengthened by the indisputable fact that the gold produced was sold within the State of California either directly or indirectly to the United States Government, and that all these facts being taken into consideration the mine was operating in intra-state as distinguished from interstate commerce and hence was not amenable to the Federal statute. But to demonstrate the uncertainty of the law the recently decided case of the National Labor Relations Board *v. the Sunshine Mining Company* while not overruling the *Idaho-Maryland Mines* case, nevertheless has whittled away the force of that decision. Here, despite the fact that the respondent had ceased purchasing outside the State of Idaho in which its properties were located, the court held on the jurisdictional question that the mine was operated in interstate commerce and distinguished the case from the earlier *Idaho-Maryland mines corporation* case on the ground that in the latter the mining company sold its products to the United States Government and that the real reason why jurisdiction did not attach was that the shipments of respondent's products were not to be considered as commercial transactions but "as administrative acts of government." From this it becomes clear that the modern courts are becoming even more self-denying in their attitude and the judicial trend seems to be such that administrative agencies such as the National Labor Relations Board will continue to usurp the place previously held in our jurisprudence by the courts themselves, unless the basic acts establishing these agencies expressly limit their power and authority and re-vest in the courts the discretion to examine and to adjudicate disputes between individuals or corporations and their government.

Subversive Philosophy

One fact that was particularly impressing throughout the course of the hearings of the Smith Committee, apart from the Board's administrative indiscretion and its allocating to itself authority never conferred upon it by the Congress, was an indication of a certain subversive philosophic attitude of mind which ran throughout the personnel of the Board and served perhaps to demonstrate the real reason for these unwarranted acts on the part of the Board and its employees. Numerous instances of misconduct on the part of agents of the Board, such as activities amounting to subordination of perjury in the course of hearings or threats made by regional directors to employers that they would "get" them, and this even before the threatened employers had received a fair and just hearing, were allowed to go unpunished and uncensored even after being brought to the attention of responsible Board employees. The hiring of men known to be prejudiced in favor of one form of unionism as opposed to another, the hiring and retaining of others whom the Board knew to be "inclined to the left," the retention of one employee in an important legal position after his appointment had been protested by scores of patriotic organizations who considered him a known Communist or Communist sympathizer—all of these instances seem to warrant the conclusion that while we search throughout the length and breadth of the country in these trying times for "fifth columnists," such a search might very well begin within the very portals of our government and in an agency which, because it has been given jurisdiction over disputes between capital and labor, is one of the most vital links in our defense program. Board Member Edwin S. Smith, himself, visited Mexico City in September of 1938 for the meetings of the Industrial Relations Institute which were held in conjunction with the International Labor Congress in which Mr. John L. Lewis played a prominent part. This International Labor Congress was convened at the request of President Cardenas and its guiding force was Vincent Toledano, General Secretary of the Confederation of Mexican Workers, which corresponds to the Congress of Industrial Organizations in this country.

Although Mr. William Green, President of the American Federation of Labor, was invited, he declined to attend, saying:

"I regard it as a meeting of extreme leftists and communists. We are of the opinion that it is being promoted for the purpose of advancing the cause of Communism in Latin-American countries."

As a matter of record, the symbol of Communism, the hammer and sickle, crossed on a red background, was prominently displayed at all of these meetings. And yet a sworn upholder of our Constitution, a public official of the United States Government, member of the National Labor Relations Board, appeared at these meetings and was seated on the speaker's platform during a vigorous attack made by the President of Mexico, Mr. Cardenas, upon the foreign policy of the United States relative to the oil land expropriations. Some of the most prominent international Communists were in attendance at these meetings and Mr. Smith was evidently in high esteem with his fellow radicals in Mexico City, for he was chosen Secretary of the United States of the League Against War and Fascism, which later became in this country the notorious Communist front organization, the American League for Peace and Democracy, of which Mr. Smith was a member at large. As late as January of 1939 Mr. Smith wrote to a friend:

"We have just got through a very strenuous weekend here with the Congress for American Peace and Democracy."

This was the organization that Earl Browder has described as a "transmission belt for communism."

The close and intimate connection between Edwin S. Smith and Harry Bridges serves further to indicate the way Mr. Smith is inclined. He carried on frequent correspondence with Harry Bridges and had several meetings with that radical labor leader. On at least one occasion Mr. Smith telegraphed an employee of the National Labor Relations Board in the San Francisco office to have Bridges call him in Washington at government expense. It is a matter of record what Bridges has meant in the way of the demoralization of industry and shipping on the West Coast. To demonstrate the adequate knowledge of the true character and radical industrial activities of Bridges possessed by Mr. Smith, and all the other members of the Board, I quote from the comment of the regional director of the Los Angeles office to the Board, which was seen by all Board members and important officials, relating to labor activity in that particular region for the month of July, 1937:

"The appointment by Lewis of Bridges as C. I. O. Director of the Pacific Coast has added fuel to the fire smoldering during the last

six months. Bridges is undoubtedly one of the most militant labor leaders on the coast, and has a concept of national organization which vigorously approaches the syndicalistic school. He believes that the control of industry will come through the control of transportation of raw materials flowing into the key industries. In accordance with this he is planning to organize into one unit the maritime workers both on ship and on shore (the Longshoremen), warehouse workers, and the trucking industry."

Bridges addressed a confidential communication to Edwin S. Smith upon one occasion, urging the appointment of certain employees to represent the Board in Hawaii, and Mr. Smith, instead of finding this suggestion entirely presumptuous, took it as a matter of course that Bridges should intervene in the internal administration of the Board, and replied as follows:

"I agree with you as to the importance of having the right sort of man in Hawaii, and the Board has this very much in mind. . . ."

"If you ever get to Washington I shall be glad to talk these matters over with you."

The tint of radicalism permeates a great part of the personnel of the Board. A large number of the legal staff of the Board are members of the National Lawyers Guild, which has recently been described by A. A. Berle, Assistant Secretary of State, in a letter of resignation directed to the president of that organization, as follows:

"It is now obvious that the present management of the Guild is not prepared to take any stand which conflicts with the Communist party line."

And in addition to thus participating in the activities of the National Lawyers Guild, a close relationship between the Labor Board and the International Juridical Association is worthy of mention. This International Juridical Association has been described as but another one of the thinly veiled Communist organizations. It was organized in 1931 by a number of lawyers who have been closely identified with radical movements, such as Carole King, secretary and mainspring of the association, and Harry Bridges' counsel in the recent deportation proceedings; Joseph Brodsky, Earl Browder's attorney; and Osmond K. Frankel, representative of the militantly radical League of Women Shoppers and one of the incorporators of the Soviet American Securities Corporation. The publication of the International Juridical Association, known as the I. J. A. Bulletin, has been frequently cited by the National Labor Relations Board in testimony before the Senate Committee on Education and Labor, and by Board Member Smith before the Smith Committee; in fact the frequency of these citations would lead the uninformed to believe that it was authoritative. Per-

haps this frequent use of the I. J. A. Bulletin is not so strange when it is realized that at least 75 employees of the Board, including two of the Board members, as well as other prominent officials of the Board, are subscribers to this Bulletin. Among the other subscribers may be noted the usual radical organizations such as the American Civil Liberties Union, the American Labor Party and the International Labor Defense. Also prominent in this list is the Consulate General of the Soviet Union in New York.

Several Board employees have contributed articles to this Bulletin as well as having served upon its executive board. Various letters and communications have been addressed to the association on the Board's stationery, presumably written on government time at the taxpayers' expense. A frequent correspondent was David J. Saposs. And he, together with Edwin S. Smith shares the distinction of writing rather frequently to Carole King, whose great appreciation of Mr. Smith is indicated in a letter addressed to Mr. Smith in which the following appears:

"I did enjoy meeting you very much and feeling that somewhere in the Government were people who are interested in our ideas rather than antagonistic."

Not satisfied with having individual employees of the Board subsidize and support the International Juridical Association, the Board in its official capacity purchased out of government funds 1,000 reprints of an I. J. A. article for distribution to its mailing list, which purchase apparently caused some consternation at the Board since the Board's publicity agent, who had ordered the publication, was obliged to defend his action in a memo addressed to the Chairman of the Board. These radical associations and views of Edwin S. Smith and other employees of the Board merely reflect the general attitude of the Board as a whole.

The employees' union at the N. L. R. B., known as the N. L. R. B. Union, whose membership embraces nearly all the Board employees and is modeled on vertical lines, contributed over \$400 to the American Friends of Spanish Democracy, another front organization, which sums were raised by personal solicitation and by entertainments. This union is affiliated with the various so-called peace front organizations, such as the notorious American League for Peace and Democracy and the Anti-War Congress. An interesting indication of the type of Americanism displayed by this group is evidenced by the action of the union in protesting against the

Anti-War Congress holding a ceremony at the Tomb of the Unknown Soldier. The union, and I quote from its minutes, "believes this to be contrary to the spirit of the anti-war movement."

Other contributions made by this union, and it must be remembered that the review attorneys, those young lawyers who actually draft and write the Board decisions, are nearly without exception members of this union, include financial contributions to several of the C. I. O. organizing drives, though there is no record of similar contributions having been made to A. F. of L. unions, as well as to the International Juridical Association, which I referred to above. An officer of this union, in referring to a Supreme Court decision, once wrote:

"The Morgan decision had us disturbed, greatly, for a few days, but the courts have on their 'red' robes again and we are on top of the world."

If these instances cited were not enough to demonstrate how completely and utterly un-American ideas permeate the structure of the National Labor Relations Board, consider the most outstanding case of all. The National Labor Relations Board numbered among its various divisions one formerly known as the Division of Economic Research. This division had as its director Russian-born David J. Saposs, whose emphatically radical leanings have been the subject of much comment on the floor of the House and in newspapers and publications throughout the country. Mr. Saposs occupies a policy-making position at the Board, and materials furnished by his division are considered by the Board as of first importance in arriving at its decisions. The Intermediate Report of the Smith Committee went rather into detail concerning the life, activities and writings of this high-salaried bureaucrat. This gentleman has been identified through his life with various radical labor movements. At one time he was a member of the faculty of Brookwood College, an institution characterized by the American Federation of Labor as a "Communist school." He was at one time a member of the Conference for Progressive Labor Action, whose avowed purpose is contained in the preamble of its constitution in the following words:

"Planless, profiteering, war-provoking, imperialistic capitalism must be abolished. It cannot be reformed. Sham political democracy, which has been the tool of capitalist business and finance, must also go. We must have a workers' republic. . . ."

The preamble further goes on to ad-

vocate revolutionary change in these words:

"We, the workers, must ourselves provide the revolutionary will. . . ."

Excerpts from the writings of Saposs thoroughly convinced the Congress of his philosophy. Such statements as these are ascribed to his pen:

"Bourgeois democracy is a sham."

"If in the attempt to carry out such a program political action fails, then the workers must unhesitatingly resort to organized force."

While Saposs steadfastly maintains that the quoted excerpts and the entire article in which they were contained were merely an impersonal report of the views expressed at the International Socialist Labor Congress held in Vienna in 1931, he can make no such claims for other sentiments expressed by his pen, particularly those in an essay written by him as late as 1935 in which he refers to Karl Marx and Frederick Engels as "profound social diagnosticians," and in which he says, referring to a fusion of middle class and workers which he advocates:

"Unless such a movement is brought into being, capitalism will go marching on, with its poverty, misery, and economic insecurity. The time is ripe; have the middle class and workers the will to rise to the occasion?"

And this is the man who occupies a highly responsible post in a highly important governmental agency. Members of his staff apparently are in thorough accord with his views. To one of them is credited such a statement as this:

"... Have you heard of the news event of last week—about Wolf L.—who received his visa to Russia and is at the present moment on the high seas? I die of envy."

Still another one writes:

"... I saw the N. Y. World's Fair—the last orgasm of capitalism."

Another employee of his division was at one time the editor of the Washington publication of the American League for Peace and Democracy. The World's Fair was apparently a matter of considerable interest among the employees of the Board, and somewhat in line with the previously quoted statement concerning the Fair is the following excerpt from a letter written by a man occupying the highly important position of regional attorney of the National Labor Relations Board at its Milwaukee office. He is writing about the Russian exhibit at the Fair, and has this to say:

"This exhibit is by far the most impressive in the entire Fair. It runs the periphery a close second in the standpoint of spell-binding attractiveness. Be sure to see the Russian layout. Just seeing this exhibit might work up an interest in you not only to see the country but also to become a citizen of Russia."

One might well be tempted to wish that such people might have the bene-

fit of their desires, and not be in positions of power and responsibility where they can impose their alien philosophy upon American business and American labor.

To return to Mr. Saposs and the Division of which he is the head, I wish to direct attention to the latest act of insolence, this time directed towards the Congress of the United States, by the powers that be at the N. L. R. B. Thoroughly convinced of the absolute necessity for dispensing with the services of Saposs and his radical satellites, the Committee on Appropriations of the House of Representatives reduced the appropriations for the National Labor Relations Board for the fiscal year ending 1941, and recommended that part of this reduction be made applicable to the funds designated for the division of Economic Research, stating its belief that this division was unnecessary, and expressing an expectation that it would be entirely abolished. In the Senate, part of the reduction in the Board's appropriations was restored, but thereafter the House and Senate conferees agreed upon the original recommendation of the Appropriations Committee of the lower House. In view of these facts there can be no doubt about the intent of Congress to abolish the Division of Economic Research, including the office of the Director. Yet in the face of this altogether justified action of the Congress, and in pursuance of what has come to be its customary defiance of Congressional mandate, the Board saw fit to discharge more than 50 members of its staff, while expressly retaining the Director of the Division of Economic Research and his principal subordinates, utilizing the perfectly obvious subterfuge of merely changing the name of the division to the Technical Service Division. Of what avail then, are the Constitutional guarantees and the separation of powers when an unscrupulous administrative agency can defy the legislature and thus set themselves above the representatives of the people? Is this democracy?

Board's Partisan Attitude

Incident can be multiplied upon incident to show the arrogant and partisan attitude of this Board. Trial examiners, men who above all others should be possessed of the highest judicial deportment, were demonstrated to have had preconceived opinions in cases which they were hearing. Such statements as these were made by some of these men:

"As far as the merits go, if I have my way

this respondent is going to be given the 'business' or the 'works' as others may call it."

Another trial examiner wrote to his chief during the course of a hearing over which he was presiding:

"The case is in the bag."

Another one had this to say:

"It's a nice question that can be decided, I think, in favor of the C. I. O. union."

Members of the review division, the division which is responsible for the drafting and writing of the Board's decisions, perform a function entirely incommensurate with their experience and ability. They, too, were shown to have adopted a very partisan attitude. In preparing their decisions these attorneys frequently had access to and made use of "off-the-record" material which was of such a nature as to prejudice them in their presentation of cases before the Board and in their preparation of the Board's decisions. A fine example of a truly judicial frame of mind was furnished during the testimony of one of these review attorneys. He seemed to make a habit of characterizing evidence introduced into the record on behalf of the respondent as "nuts" or "baloney."

The Board maintains within its own administrative set-up an espionage system that one prominent Board official characterized as comparable to the OGPU. That Board also has in its employ a highly-paid special investigator who seems to perform the function of acting as a liaison man between the Board, the Congress of Industrial Organizations, and the Civil Liberties Committee, even going so far as to advise both organizations on matters of policy. This same man had the effrontery to say that a Justice of the Supreme Court was influenced in his decisions by the New York and Philadelphia bankers.

Proposed Amendments

The Congress was shocked by the disclosures made by the Smith Committee and determined to put an end to such mal-administration on the part of power-conscious administrators who pay hypocritical lip service to due process, particularly since this Board operates in the highly important field of labor relations—a field of vast importance today. The House of Representatives on June 14, 1940, approved by a 2-to-1 vote the amendments to the National Labor Relations Act submitted by the Smith Committee. These moderate amendments would make a number of changes, especially in the personnel and administrative set-up of the new Board which it would constitute. These amendments

(Continued on page 62)



WHEELS of Government

LATE in September Vice President John Garner returned to Washington in response to the urging of his friends for the purpose of participating in winding up the activities of the present Congressional session in early October, but at the present moment the Asiatic influence on the international situation has brought new uncertainties to the Congressional and Administration policies. Results in the primary elections have shown that there will be many new faces in the 77th Congress which will meet in January. The November elections will return many Senators and Congressmen who have the welfare of mining at heart but there is sincere regret that several of mining's friends of long standing will not be present when the new Congress convenes.

Taxation

After closing the hearing on the excess profits tax bill on August 14, the House Committee on Ways and Means reported a bill on August 28 which was passed on August 29 with a minimum of debate and sent to the Senate. Repeatedly during the brief debate on the House floor Congressman after Congressman stated that the bill was badly written and wholly incomprehensible, and that able men who had followed tax legislation for years were unable to say what the bill contained or what its far-reaching effects would be on corporations engaged in productive enterprise.

The House bill contemplated an excess profits tax at rates of from 20 to 50 percent on taxable years beginning after December 31, 1939. An excess profits credit to be deducted in arriving at taxable income was to be computed either on an invested capital basis or on an average earnings basis, using the years 1936 to 1939 inclusive as a base period. If the taxpayer elected to use the average earnings method he was penalized by a 4.1 percent addition to his normal tax rate and was subjected to a higher scale of rates in the assessment of his excess profits tax. Consolidated returns were not permitted and there were numerous other inequities.

The Executive Tax Committee of the American Mining Congress met

• As Viewed by A. W. Dickinson of the American Mining Congress

on September 3 and 4 and on September 5, Chairman Henry B. Fernald appeared before the Senate Finance Committee and presented the position of the mining industry; Donald A. Callahan of Wallace, Idaho, for the Idaho Mining Association and Evan Just of Miami, Okla., for the Tri-State Zinc and Lead Ore Producers Association presented the views of the mineral producers in their respective fields to the Finance Committee. In brief, the mining industry asked that the pending bill include the use of the 1936-1939 base period, with income to be computed by selecting not more than three out of the four years and with no penalties for the use of this method; a 10 percent return under the invested capital method; borrowed capital to be included in full in the computation of invested capital; special relief provisions to be administered by a board independent of the Bureau of Internal Revenue; provision for consolidated returns; taxpayer to make his election to use either the average earning or the invested capital method *at any time*; basis for property to be included in invested capital should be the basis "for determining gain"; excess profits credit carry-over to be allowed for succeeding years; and the law to apply only to years beginning after December 31, 1940.

As reported by the Senate Finance Committee on September 11 the bill was greatly improved over the House version and as passed by the Senate on September 19 and sent to conference it contained:

1. Use of base period income method without penalty and by corporations in existence for any part of base period (1936 to 1939).
2. Allowing taxpayer to use any three out of the four years in the base period.
3. Allowance of flat 8 percent rate on invested capital.
4. Percentage brackets as alternative to dollar brackets to be used in computing tax.
5. Consolidated returns permitted for excess profits tax.

6. Provision for special relief but with such revision as would make it adequate to cover the many special cases to which it should be applicable.

In the Senate form the penalty of 4.1 percent for corporations using the "average earnings" method was removed and the normal corporation tax increased to 24 percent. A specific exemption of \$10,000 was allowed before the application of the excess profits tax and Senator Pittman of Nevada placed in the bill an amendment exempting the strategic mineral producing corporations.

When the conferees reported on Sunday, September 29, after difficulties in the conference which up to the last few hours were reported as likely to kill the bill, the report which was later approved by both Houses and has gone to the President for signature, retained the use of the base period income method but limited the taxpaying corporation to 95 percent of its average earnings in computing taxable income for excess profits tax purposes. The normal corporation return of 24 percent was retained as were the allowance of a flat 8 percent rate on invested capital, consolidated returns, and provisions for special relief. The specific exemption of \$10,000 was cut to the \$5,000 exemption originally allowed in the House bill and the Pittman amendment exempting strategic mineral mining was retained. The Senate amendment allowing the taxpayer to use any three out of the four years in the base period was lost as was also the amendment by Senator George which would have permitted percentage brackets as alternative to dollar brackets to be used in computing the excess profits tax.

As sent to the White House the bill contained the five-year amortization provisions for emergency defense facilities which the administration had doggedly refused to have separated from the excess profits tax features of the measure but it is clearly recognized by Congressional leaders and everyone else concerned with this legislation that the special relief and many other provi-

sions of the excess profits tax bill will have to be reconsidered by Treasury representatives and by the staff of the Joint Committee on Internal Revenue Taxation in preparation for the Revenue Bill of 1941 which it is understood must come in the early months of the new 77th Congress.

Coal Prices

Interior Secretary Ickes continues to issue orders and releases which state that coal price schedules, rules and regulations and enforcement under the Guffey Act shall become effective on October 1. It has now been provided that contracts made for the sale of coal after November 15, 1940, may be made for any specified time up to one year, thus changing the previous rule which had limited contracts to 30 days; it is further provided that contracts for more than 12 months may be made upon a showing of necessity and upon securing the approval of the Director. In a release reviewing the activity of the Bituminous Coal Division, Department of the Interior Secretary Ickes states that it is clear "beyond any doubt" that a full and fair hearing has been had.

Late this month Speaker Rayburn of the House of Representatives named Representatives Flannery of Pennsylvania, Flaherty of Massachusetts and Fenton of Pennsylvania as a committee authorized by House resolution to investigate the situation of the Pennsylvania anthracite industry, and to make recommendations to the Congress with reference to the possibility of legislation as a means of stabilizing production, employment and sales.

Strategic Minerals

Through the efforts of a group of mining Senators and Representatives the Murray (Montana) bill, S. 4008, has been enacted authorizing RFC loans up to \$40,000 for the development of deposits of strategic and critical minerals. This law is an expansion of the enactment secured by Senator Key Pittman of Nevada, five years ago for the development of gold, silver and tin deposits. The new RFC rules and regulations as well as application forms to be used in the administration of the new law will be available in the near future and it is believed that the RFC administrative officers will be as constructively helpful as possible in assisting the progress of new developments.

The procurement of strategic minerals and metals has received further impetus in a Bureau of Mines appropriation of \$380,000 contained in the

Civil Functions Appropriations bill, to be used for investigation of domestic sources of mineral supply with particular reference to sources of aluminum, including the processing of aluminum from deposits of kaolin. An appropriation of \$2,000,000 has also been included in the third supplemental defense appropriation bill, to be expended under the U. S. Bureau of Mines in the construction and operation of pilot plants for the beneficiation of manganese ores and the production of metallic manganese by electrolytic or other processes. This work is being supported in the Congress by Senators and Representatives from Nevada, South Dakota and Arizona, and in debate on the House floor Representative Scrugham of Nevada stated: "I first presented the matter to Mr. Stettinius of the desirability of erecting the proposed pilot plant. He re-

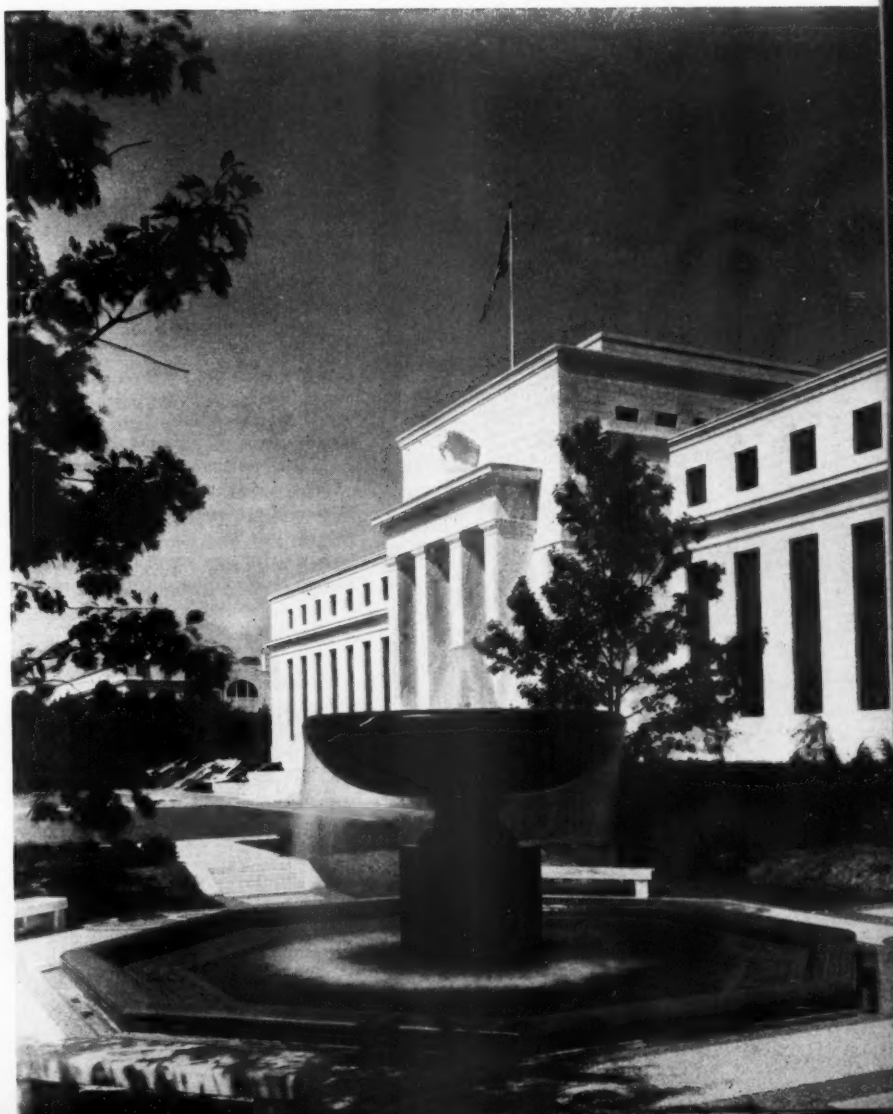
ferred me to Messrs. R. C. Allen and C. K. Leith who are the Advisory Committee experts who have been put in charge of such matters. Their recommendation I have here. It reads as follows:

"Attached is a recommendation from the Technologic Committee on Manganese of the National Academy of Sciences and National Research Council, recommending the immediate release of \$1,375,000 to the Bureau of Mines for specified construction and experimentation on the ores of manganese. The recommendations for the expenditure of the remaining \$625,000 of the \$2,000,000 originally set aside . . . will follow later.

"We strongly urge that the necessary steps be taken at once to release the recommended amount to the Bureau of Mines at the earliest possible
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Federal Reserve Building

—Harris & Ewing



With the COAL DIVISION

of the AMERICAN MINING CONGRESS

TENTATIVE SAFETY RULES—Submitted by the Safety Committee

• *Special Rules for Miners and Loaders*

1. No person should be permitted to enter any place where a danger sign or signal is displayed, unless specifically authorized by the mine foreman.

2. On entering his working place, each miner should be required to examine it carefully, take down all loose and dangerous roof rock or coal with a slate bar, and otherwise make his place safe before proceeding with his work. A slate bar should be required to be used in taking down slate—never a pick. Safety posts and other necessary timbering should be set before he starts to work, and he should be required to keep his working place at all times well timbered and safe.

3. Every miner or workman should be required to notify the foreman of his timber requirements at least one day in advance, but in case of emergency the timber may be ordered immediately; if the timber is not delivered promptly, the miner or workman should be required to keep away from the place until the timber is delivered.

4. The miner should be required to keep the tracks which he is required to lay, and responsible for, in his working place in safe operating condition; and motormen and drivers should not be permitted to deliver empty cars to miners whose track or timbering are not in safe or satisfactory condition.

5. Miners and loaders should be required to securely block all cars when placed before the motor leaves the place and before beginning to load coal, refuse, or any other material. In addition to setting brakes, cars should be blocked by means of standard cross-blocking, by clevis on rail, or other approved method. Chips or small pieces of wood or similar material under wheels should not be considered standard blocks.

6. All miners and loaders, when setting props or placing materials, should be required to provide sufficient clearance from the track. (Clearance should be specified.)

7. The roof should be tested at frequent intervals throughout the shift by using the vibration method, where the height of the roof permits, as follows: Place the finger tips of one hand against the roof and tap the roof with a pick or bar about 1 ft. from the fingers. Loose roof will be indicated

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The special rules shown here are a part of the complete set of rules covering various phases of mining which are being published in the Journal.

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by the feel of vibration through the finger tips. Where the height of the roof does not permit this method other accepted methods should be employed. A bar is preferable to a pick for roof testing purposes.

8. If, for any cause beyond his control, a miner should find his working

place becoming dangerous, he should be required to immediately vacate the place, put a warning sign at the entrance, and report the conditions to his foreman.

9. In hand loading, the miners should not be permitted to remain at the face of the working place while the machine is cutting. Conveyor mining excepted.

10. Every employe engaged in pillar work should be required to use extreme care to protect himself and others from the dangers incident thereto and should bear in mind that the coal he removes weakens the roof and makes frequent roof inspection necessary. Every employe in pillar sections should pay particular attention to the condition of the roof over the breakthroughs, haulageways, and passageways in the vicinity of such pillar work.

11. Lunches should be required to be eaten in a safe place and at a safe distance from where explosives are stored.

12. Each coal loader should be required to provide himself with such tools as are specified by the local mine management, which shall be the minimum consistent with efficient and safe mining, and they should be kept in good repair and safe condition.

• *Special Rules for Blasting and Handling Explosives*

1. All explosives should be transported, handled, used, and stored in accordance with the provisions of the State Mine Law.

2. Employes who handle explosives should be guided by every measure of precaution. This rule should apply to all employes who handle explosives

whether rarely, occasionally or frequently.

3. No miner should be permitted to have in his possession more explosive than he may reasonably expect to use in one shift.

4. No employe should be permitted to smoke while handling explosives.

5. It is recommended that only one shot should be permitted to be fired at a time; and no shots should be fired in any place known to liberate explosive gas until such place has been properly examined by an authorized and competent person and found to be free from explosive gas.

6. In shooting coal the charge should not be heavier than necessary, and in no case heavy enough to shatter the roof. (Required quantities may be specified.)

7. Holes should not be permitted to be charged with more than one kind of explosive, and all tamping used should be of non-combustible material, and the use of coal dust for such purposes should be positively forbidden. All holes should be required to be tamped to the mouth of the hole.

8. Copper needles and wooden, copper or copper-headed tamping bars, and no other, should be required to be used in the mines for tamping powder; and wooden tamping bars only should be permitted to be used in tamping holes being charged with dynamite and all permissible explosives.

9. When fuse is being used for firing a shot, it should be required to extend at least 6 in. outside the mouth of the hole, and the charge should be placed at the back of the hole. Fuse should not be permitted to be laced through the cartridge, but should be attached as recommended by the powder manufacturer.

10. No shots should be permitted to be fired from trolley wire or other electric power circuit within the mine. No squibs should be permitted to be shortened. When caps are used they should be required to be crimped with an approved crimper.

11. Every employe when using battery and cable for shooting, should be required to have the cable rolled up when connecting the cable to the charge, the cable to be unrolled as he leaves the charged hole. Cables used for firing shots should be at least 100 ft. long, and of insulated wire free from bare spots and bare splices, and under no circumstances should the cable be stretched out before connecting the detonator or electric squib, and the person connecting the cable to the charge should be required to connect the cable to battery himself and fire the shot. All cables should be rolled up after firing, and after each shot the ends twisted together. Wires on detonators should always be short-circuited until attaching the cable. No shots should be connected while power is on any machinery at the face.

12. When firing shot all persons likely to be endangered thereby should be required to be in breakthrough or properly protected place out of line of blasted particles, or at least the full length of the cable from the shot when shooting with battery and cable.

13. No blasting should be permitted to be done by the "dobie" or mud cap method inside the mines.

14. Whenever an employe is about to fire a blast, he should be required to notify all persons who might be endangered thereby, and should give sufficient alarm so that any person or persons approaching shall be warned of the danger.

15. When a shot fails to explode, the employe should not be permitted to return to the shot until sufficient time has elapsed to insure there being no danger. (The minimum safe waiting time for each type of exploder should be stated in the rules.)

At the expiration of the time indicated, if the shot has not gone off, a new hole should be required to be bored at least two feet from the shot that failed, and the new hole should be charged and fired. If and when a hole fails to explode, and a second hole is bored and exploded near the first hole, the explosives used in the first hole should be required to be recovered. Every employe should be forbidden to attempt to re-open holes

charged with explosives. Where squibs are used and the shot fails to explode the hole should be permitted to be re-squibbed after waiting the allotted time. In case of a charge failing to explode the employe should be required to guard against others entering the place until sufficient time, as above indicated, has elapsed to return with safety and should immediately notify employes in the vicinity, and place a warning at the entrance of the working place. Employes should not be permitted to go back to a failed shot without first disconnecting cable from battery and taking cable with him, where battery and cable are used.

16. Holes from which shots have blown out should not be permitted to be recharged.

17. After firing a shot, the employe should be required to remain away and not return to work until the smoke has cleared away so that he may make thorough examination of his working place. He should then examine his working place and especially the roof and ascertain whether it is safe, and if found not to be, he should prop or otherwise make it safe before doing other work.

18. Under no circumstances should failed shots be permitted to be left from one shift to another unless the place is fenced off and the mine foreman or his assistant notified.

• Special Rules for Man-Trip

1. All man-trips should be required to be handled with caution, and every trip should have an official in charge with authority to make certain that it is operating safely.

2. Man-trips should be required to come to a full stop before anyone gets on or off; and standing up or changing from one car to another while trips are in motion should not be allowed. Men should be required to sit low in cars and keep arms and feet inside of cars.

3. All men should be required to ride on the off side from the trolley wire; and all tools should be placed in the first or last car of the man-trip, men not allowed to ride in car containing tools or in car next to locomotive.

4. The speed of the man-trip should be directed by the official in charge of the trip and should at all times be slow compared with the handling of other trips.

5. No man-trips other than the regular trips in and out of the mines should be permitted to be run, except on orders from the mine foreman, or in case of an accident. In case of accident dispatcher should be notified to clear the way.

6. All the men should be required to board and leave the trips in an orderly manner, without haste or crowding, and on the side opposite the trolley wire. Over-crowding in cars and "horseplay" on man-trips should not be tolerated.

7. Under no circumstances should a man-trip be permitted to be pushed by a locomotive, and no man-trips should be permitted to be attached to loaded trips.

8. In mines where open lights are used carbide should not be permitted to be emptied from lamps while man-trip is in motion.

9. Protective goggles should be worn while riding in man-trips.



The March of COAL MINING

Ten Years of Progress

TRENDS IN POWER COSTS

By G. B. SOUTHWARD
Mechanization Engineer
American Mining Congress

MACHINES require power for their operation, and it is often assumed that the application of mechanization to coal mining has meant a marked increase in the power cost. It is of course true that a larger amount of power purchased will be followed by a larger monthly charge, but it has been found that mechanization, while using more current, does not always result in an increased power cost per ton of coal mined. It all depends upon the degree of efficiency with which the current is applied, and since hand loading mines do not, as a rule, have as efficient electric installations as mechanized mines, it frequently happens that the change from hand to machine methods does not raise the power cost per ton.

Power Survey

This fact is brought out by the figures in the table shown on the opposite page. This is a compilation of averages taken from annual power surveys that have been made during the past seven years in the southern Appalachian field, covering 160 mines and

their experience can be considered as fairly representative of the district. An examination of these tables shows some interesting trends, but it must be remembered that these figures are group averages of a number of individual mine records and not the individual mine records themselves.

The operations included in the table mined approximately 33,000,000 tons of coal in 1933, which was raised to slightly over 37,000,000 tons in 1939—an increase of 12 percent in production. However, the monthly power purchased in 1933 was 733,000 k.w.h., which was raised to 1,031,000 k.w.h. in 1939—an increase of 29 percent. This of course is a direct indication that there has been a considerable number of machines installed for all classes of work, which is further borne out by the k.w.h. used per ton of coal, as shown in the eighth column of the

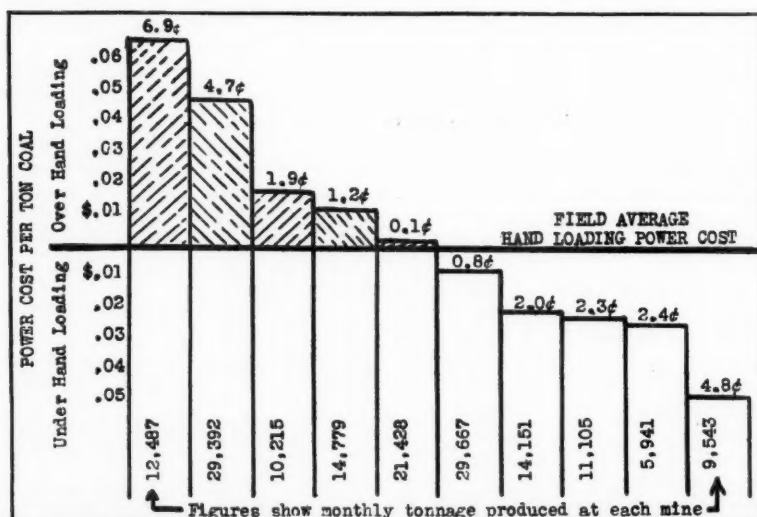
table. It will be noted that, with the exception of the mines producing less than 5,000 tons per month, there has been a general increase in the k.w.h. per ton of coal mined, and in the 60,000-tonnage class this amounted to 50 percent in the past 7 years—from 4.16 in 1935 to 6.24 in 1939.

The figures in the ninth column, showing the power cost per ton, do not follow the same curve of increase as the k.w.h. per ton. In several of the tonnage groups the average has actually been lowered and where increases do occur they are fractions of a cent. This is very definite proof of a higher efficiency in the use of power in the machine operations.

Mechanized Loading

A majority of the mines covered in this survey are using hand loading, although a number of mobile loaders and conveyors have been installed within the past few years, and more units are now going in. The accompanying chart shows how the total power cost per ton of coal (including all work from the face through the tippie) at these individual mechanized operations compares with the average of the mines in this field. In examining this chart, it must be kept in mind that the figures are not the total power costs but merely show the differences between hand and mechanical loading.

The wide variance in these records, ranging from 6.9c higher to 4.8c lower than the field averages is such that the chart cannot be considered as proving or indicating any decided trend. It does, however, substantiate the statement that the highest power costs are not necessarily found in mechanized mining and that this item depends more on the operating efficiency than on the operating method.



Figures show monthly tonnage produced at each mine
Power costs at mines with mechanized loading compared to average field costs with hand loading

ANALYSIS OF POWER COSTS OF COAL MINES
AVERAGES FOR SEVEN YEARS, 1933 TO 1939
COMPILED FROM STATISTICS COVERING MINES IN WEST VIRGINIA, VIRGINIA, AND KENTUCKY

Average for	Number of Mines	Average Monthly Tonnage	Substation Capacity K.W.	Average Monthly K.W.H. Purchased	Average Monthly Power Charge	Total Cost per K.W.H.	K.W.H. per Ton Coal	Power Cost per Ton	D.C. Hp. Connected per K.W. Substation Capacity	Tons Coal per Total A.C. Hp. Connected
MONTHLY TONNAGE CLASS 0 TO 5,000 TONS										
1933	20	3,547	159.21	19,774	\$473.42	\$.0239	5.58	\$.1334	3.13	11.82
1934	23	3,744	146.25	22,822	527.16	.0231	6.09	.1408	2.46	13.32
1935	24	3,452	145.45	20,748	478.51	.02306	6.011	.13861	2.318	13.04
1936	11	3,871	154.54	20,146	476.76	.02367	5.204	.12316	2.058	13.08
1937	10	3,360	144.44	24,992	524.43	.02098	7.438	.15610	1.906	9.83
1938	15	3,614	167.87	19,910	467.28	.02347	5.509	.1293	2.08	11.29
1939	6	3,541	135.71	18,643	424.75	.02278	5.26	.1199	2.34	12.60
MONTHLY TONNAGE CLASS 5,000 TO 10,000 TONS										
1933	30	7,601	193.65	35,489	733.42	.0207	4.67	.0964	2.45	20.01
1934	31	7,384	220.37	39,915	865.66	.0217	5.40	.1172	2.45	16.86
1935	34	7,534	223.03	40,681	865.81	.02128	5.40	.11492	2.489	17.43
1936	33	7,799	183.33	42,297	872.88	.02064	5.423	.11192	2.505	19.42
1937	28	7,544	186.92	40,575	814.18	.02007	5.379	.10793	2.541	19.16
1938	35	7,459	190.88	43,003	858.33	.01996	5.765	.11507	2.61	17.41
1939	35	7,587	210.92	44,896	828.96	.01846	5.92	.1093	2.56	17.17
MONTHLY TONNAGE CLASS 10,000 TO 20,000 TONS										
1933	50	14,533	299.50	68,504	1,285.33	.0188	4.71	.0886	2.66	24.92
1934	49	14,887	334.10	77,602	1,428.28	.0184	5.21	.0959	2.85	24.76
1935	45	14,050	341.31	75,956	1,388.67	.01828	5.406	.09884	2.40	22.04
1936	40	14,314	298.75	74,674	1,350.57	.01809	5.217	.09435	2.766	25.44
1937	45	14,474	310.72	78,446	1,364.75	.01740	5.420	.09429	2.688	22.82
1938	49	14,695	393.87	92,659	1,579.85	.01705	6.305	.1075	2.81	18.67
1939	48	13,760	347.92	80,880	1,358.02	.01679	5.88	.0987	2.68	20.55
MONTHLY TONNAGE CLASS 20,000 TO 30,000 TONS										
1933	32	24,317	420.40	121,643	2,017.38	.0166	5.00	.0830	2.70	26.64
1934	33	24,275	486.80	135,391	2,222.60	.0164	5.58	.0916	2.61	23.29
1935	36	24,684	507.14	131,672	2,203.16	.01673	5.334	.08925	2.705	24.27
1936	34	24,706	443.38	128,514	2,094.45	.01630	5.202	.08477	2.602	24.30
1937	27	24,954	463.89	135,164	2,096.32	.01551	5.417	.08401	2.819	26.11
1938	30	23,870	527.73	139,917	2,208.29	.01579	5.861	.09251	2.794	20.41
1939	28	24,565	479.64	134,134	1,963.51	.01464	5.46	.0799	2.93	23.03
MONTHLY TONNAGE CLASS 30,000 TO 60,000 TONS										
1933	19	40,618	737.50	206,018	3,163.69	.0154	4.84	.0743	2.84	27.31
1934	14	41,239	681.80	194,503	3,020.35	.0155	4.72	.0732	2.73	27.13
1935	18	39,640	750.00	201,250	3,234.89	.01607	5.077	.08161	2.489	24.13
1936	26	39,339	607.69	168,634	2,789.04	.01536	4.617	.07090	2.713	30.61
1937	32	39,607	660.94	196,477	2,861.18	.01456	4.961	.07224	2.815	28.09
1938	17	36,857	715.62	200,695	2,914.09	.01451	5.445	.07906	2.94	22.46
1939	26	40,231	769.2	210,402	2,973.92	.01413	5.23	.0739	3.07	22.93
MONTHLY TONNAGE CLASS OVER 60,000 TONS										
1935	3	67,661	1,116.0	281,403	4,215.31	.01498	4.159	.06230	3.061	27.51
1936	5	75,801	1,120.0	306,966	4,410.54	.01437	4.050	.05819	2.810	38.11
1937	5	90,546	1,277.0	489,048	5,854.44	.01197	5.401	.06466	2.622	36.54
1938	5	88,282	1,382.0	594,076	6,827.59	.01149	6.729	.07733	3.55	32.77
1939	5	86,826	1,070.0	541,730	5,966.68	.01101	6.24	.0687	3.31	39.24

PRIVATE STEAM PLANTS

Average for	Number of Coal Companies	Average Monthly Tonnage	Steam Plant K.W. Capacity	Monthly Fuel Cost	Monthly Operation Labor Cost	Monthly Supply and Repair Cost	Total Monthly Cost	Cost per Ton	Total Hp. Connected per Steam K.W.	Tons Coal per Hp. Steam Plant
1933	14	18,204	586.10	\$625.29	\$473.39	\$238.79	\$1,175.71	\$.0646	2.71	26.93
1934	15	21,680	567.60	743.47	697.65	434.57	1,605.92	.0742	2.72	25.69
1935	15	25,380	800.42	810.10	816.55	295.42	1,873.61	.07382	2.708	22.24
1936	11	34,094	990.50	833.78	1,047.90	436.87	2,238.96	.06567	2.466	23.75
1937	12	37,062	956.50	889.58	1,279.10	678.06	2,724.28	.07351	2.586	25.42
1938	8	39,789	1,093.75	829.09	1,066.40	706.03	2,507.20	.06301	2.13	23.94
1939	9	34,229	1,016.67	729.96	943.22	588.01	2,148.13	.0628	2.11	24.56

NOTE: The above table is compiled from annual power surveys made by the West Virginia Engineering Company, Charleston, W. Va., and furnished to the Coal Division of the American Mining Congress through the courtesy of H. P. Musser. Copies of the 1939 survey will be sent on request to the American Mining Congress.

National Labor Relations Board

(Continued from page 55)

can in no sense be called emasculatory of the rights of labor. In fact they enjoy the endorsement of the American Federation of Labor. By providing for a separation of the prosecuting and judicial functions of this tribunal through the creation of an Administrator, the separation of functions upon which is based our entire concept of democracy is reached in proceedings before the Board. This separation would be actual and not merely formal. By providing for the application of rules of evidence a fair hearing is guaranteed; by providing for a more complete judicial review a check is placed upon the activities of political administrators and the rightful place belonging to the courts in the framework of our government would be established.

It is not my purpose to dwell at length or in detail upon these proposed amendments. Suffice it to say that they have all been conceived with one thought in mind; namely, to safeguard the rights of labor without sacrificing the inalienable rights of due process and freedom of speech—to make more equitable a one-sided piece of legislation and to insure that its administration will be fair and impartial and in thorough accord to the American concept of equal justice for all. I am confident that if everyone were made familiar with the record of the proceedings before the Smith Committee a shocked and outraged public opinion would demand that the administrators of this agency be removed and a check placed upon their successors.

The words of Mr. Justice Sutherland in *Jones v. Securities Exchange Commission*, 290 U. S. 1, are peculiarly fitting and appropriate and might well be applied to the N. L. R. B., pointing as they do to the basic evil that seems to be co-existent with these administrative agencies:

"The action of the Commission finds no support in right principle or in law. It is wholly unreasonable and arbitrary. It violates the cardinal precept upon which the constitutional safeguards of personal liberty ultimately rest—that this shall be a government of laws—because to the precise extent that the mere will of an official or an official body is permitted to take the place of allowable official discretion or to supplant the standing law as a rule of human conduct, the government ceases to be one of laws and becomes an autocracy."

It is necessary that people be enlightened with respect to this urgent growing administrative absolutism. Once enlightened, the loyalty of the

American people to the ideals and institutions of our democracy will be a sufficient safeguard, but it is necessary that we always be on the alert, and that measures be taken to check any encroachment upon our liberties. The government should not be represented by men whose ideas are tinged with class hatred and an alien philosophy which aims at the destruction of the institutions we hold dear.

The time is right for us to bring about the return of the American philosophy that capital and labor have an equal share of rights and duties in industry. That the interests of the employer and the employee are mutual and not diverse. This return and our defense program cannot be accomplished as long as this government agency is permitted to champion one element of labor, override the rights of employers and other groups, and maintaining and fostering radicals.

Wheels of Government

(Continued from page 57)

date in order that it may begin at once on the planning of equipment and personnel.

"C. K. LEITH,
"R. C. ALLEN."

"Those men are the experts who are placed in charge of manganese matters by the Council of National Defense. The opinions of the Technologic Committee are certainly worthy of credence."

The Wage Hour Division, Department of Labor has contributed its need of assistance to the strategic mineral procurement program by issuing a final order which classifies as seasonal the surface mining of tin in Alaska. Under this order workers may be engaged in the Alaskan tin deposits up to 12 hours a day and 56 hours a week without payment of overtime, for a period of not to exceed 14 work weeks in any calendar year.

While steel and cast iron melting scrap are not classified as strategic or critical materials, they do enter the picture as essential in the program of national defense and a recent Presidential order embargoes their exportation after October 15. Licenses will still be issued permitting shipment to countries of the Western Hemisphere and to Great Britain. The recent loan to the Chinese Government of \$25,000,000 is also significant as it complements the agreement of the Metals Reserve Company (RFC) to buy tungsten from the National Resources Commission of China to the value of \$30,000,000, to be received over a period of years at prices in accord with

market conditions at the time of delivery.

National Labor Relations Board

The Senate Committee on Education and Labor continues to delay in reporting the Howard W. Smith amendments to the National Labor Relations Act. The fate of these amendments in the present session will depend on the decision to adjourn or to recess and also of course upon the results of the November election, in the event that the Congress is kept in session.

Congressional attitude toward the Board's administrative procedure was indicated recently when in considering the Civil Functions Appropriation Bill the House specified that, of the additional funds asked for the National Labor Relations Board, no money is to be used to carry on the functions of the Economic Research or of the Technical Service Division. This is because of the evasive tactics which have been used by the Board in retaining the services of David Saposs whose activities were severely criticized in testimony which developed before the Howard W. Smith Investigating Committee.

The attempt made in consideration of the Military Conscription Bill, to place complaints or disputes concerning reemployment of returning trainees under the jurisdiction of the National Labor Relations Board, was defeated by the House Military Affairs Committee after the conscription bill had passed the Senate and this feature is not included in the law as approved by the President.

Federal Mine Inspection

Signatures on the petition to discharge the House Mines and Mining Committee from consideration of the Neely bill, S. 2420, increased in number early in September to 203. Later some of the members of the House who had signed the petition under a misunderstanding of the true nature of the Neely bill, walked up to the Speaker's desk and withdrew their signatures, and it is understood that the number now stands at 196. Proponents of the bill have worked very hard to secure another meeting of the House Mines and Mining Committee in the hope that the bill could be forced out, but no such committee meeting has as yet been called. Proponents of S. 2420 have stated that enactment is desired by Administration forces, but while it is known that Secretary Ickes is an ardent advocate it is not believed that the proponents can secure the full and active assistance of the Administration in their behalf.

PERSONALS



Lewis A. Grant, for many years identified with Hecla milling operations in the Coeur d'Alene, has been appointed superintendent of the Granview mill of the American Zinc, Lead and Smelting Company at Metaline Falls, Wash.

Grant Stauffer, president, Sinclair Coal Company, Kansas City, was elected a director of the American Mining Congress at a meeting of the Congress' board of directors held at Colorado Springs, Colo., September 19.

Mr. Stauffer has been prominently associated with many activities for the betterment of the mining industry, and is president of the Kansas City Chamber of Commerce.



Harold Roeschenstein, president of Owens-Corning Fiberglas Corporation, has been chosen an outstanding alumnus of the College of Commerce and Business Administration of the University of Illinois.

V. O. Murray has been appointed general superintendent of the Union Pacific Coal Company.

Other changes in the company's personnel as announced by George B. Pryde, vice president in charge of operations, include: **H. C. Livingston**, chief engineer; and **C. E. Swann**, formerly chief engineer to special engineer.

Mr. Livingston will give special attention to surface design and construction work, while Mr. Swann will have charge of underground mine development planning, real estate and taxes.

G. S. Jaxon, formerly engineer of the coal preparation division of the Link-Belt Company has been named manager of the company's coal preparation division. He assumed his new duties October 1 and is now located in the Koppers Building at Pittsburgh, Pa.

Herman C. Bellinger, vice president in charge of operations, Chile Exploration Company, has been named the William Lawrence Saunders Gold Medalist for 1941 for achievement in mining. The medal will be presented in February.

Robert Linton of Los Angeles has been selected by the Los Angeles

Chamber of Commerce to head a committee to assemble data on California's available resources of strategic minerals needed in connection with the national defense program.



A. W. Johnson has been elected vice president in charge of dock operations of the Inland Coal and Dock Company. He succeeds **W. A. Prinsen**, deceased. Mr. Johnson will maintain his headquarters at Duluth, Minn.

J. B. Johnson, formerly director of purchases for Hercules Powder Co., has been appointed assistant general manager of the explosives department. **K. W. Jappe**, formerly manager of the company's plant at Port Ewen, New York, has been appointed director of purchases to succeed Mr. Johnson. Both men assumed their new duties July 8, with headquarters in Wilmington.

Gordon S. Rentschler, chairman of the board of the National City Bank, has been elected a director of the Anaconda Copper Mining Company to fill a vacancy caused by the death of the late **James H. Perkins**.

Word has been received from **John C. Cosgrove, Jr.**, who for the past two years has been a mining engineer in the gold fields of South Africa, that he has enlisted in the South African army and is now a corporal in the Field Survey Company, South African Engineer Corps. He advised that his company is moving north into Kenya Colony to do advance research work for the army.

A. E. Stanton, former auditor of the American Zinc Company of Illinois, has been promoted to vice president of the company. Mr. Stanton will be situated at the general offices of the company in St. Louis.

Dr. Lincoln T. Works, associate professor of chemical engineering at Columbia University, has been appointed director of research for the Metal &

Thermit Corp., New York. Beginning July 1, all the corporation's research and development activities, including work in electric arc and thermit welding, pigments, metals, alloys, etc., has been under his supervision.

Charles L. Bradbury of Albuquerque, N. Mex., has been appointed vice president and general manager of the Raskob Mining Interests, Inc., at Madrid, N. Mex.

Jack Lewis, mine boss for the Northwestern Improvement Company, Roslyn, Wash., has been appointed by Governor Clarence D. Martin to the 42-member state defense council which the Governor created to "coordinate the work of all local military, naval, and civilian agencies in furthering Washington's part in the national defense program."

D. J. Carroll has been appointed general manager of the Crab Orchard Improvement Company and will make his headquarters in Beckley, W. Va. He was formerly connected with Continental Coal Company.

George W. Rooney has been named comptroller of the United States Steel Corporation of New Jersey by Irving S. Olds, chairman of the board.

Mr. Rooney fills the vacancy left by the death of **Adolph W. Vogt** last November.

Mr. Rooney has been associated with United States Steel subsidiaries since 1930. He was appointed comptroller of the National Tube Company in 1938.



J. B. Morrow, formerly production vice president of the Pittsburgh Coal Company has been elected president of that company. He assumed the duties of his new office September 1, succeeding **J. D. A. Morrow**.

The new president joined the company in 1927 as preparation manager and was appointed vice president in charge of production in 1938.

Reginald M. Banks has been appointed assistant to the president of the American Cyanamid Company to promote the coordination of research and sales activities. Mr. Banks came to Cyanamid in 1928 from Nitrate Agencies Co., a subsidiary of W. R. Grace & Co. He has recently been manager of the organic chemical sales department of American Cyanamid & Chemical Co. **Walter T. McAdam** has been appointed to fill the post left vacant by Mr. Banks' promotion.

Stanley T. Wallace has been promoted from assistant superintendent to assistant manager of the Federated Metals Division of the American Smelting and Refining Company. He will be located in Backemeyer, Ill.

Oregon's Quicksilver Industry

(Continued from page 17)

property cinnabar has been found in a bed of lignite. Since 1916, several different operators have worked the deposit. Schuette⁸ gives the total production to the end of 1937 as about 640 flasks from about 3,300 tons of ore. There has been no production since. The present operators, Mineral Mines, Inc., are building a mill to use gravity concentration. Plans for furnacing have not been reported.

Chisholm Property.—Owned by the Chisholm Estate, this mine is about 4 miles south of the War Eagle. Cinnabar has been reported as exposed in small quantities in several cuts and adits, many of which are caved. Meager information is available as to the possible grade of ore.

⁸ Op. cit.

Clackamas Locality

A relatively new cinnabar district is that on the Oak Grove fork of the Clackamas River in Clackamas County, northwestern Oregon. In the general area near Oak Grove Dam, reached by the way of Estacada, there are three groups of adjoining claims in T. 6 S., R. 7 E., known as the Nisbet, Kiggins, and Ames group. For the past several years a few flasks have been produced each year by George Nisbet from a small shaft furnace. In 1939, the Nisbet property was optioned by the Oregon Quicksilver Company. A new shaft furnace with condenser was built and some mining equipment installed. About 23 flasks have been produced, so far, in 1940.

In this locality cinnabar occurs as seams and veinlets in calcite veins in basalt. Calcite was deposited in fractures along parallel lines of faulting and influenced by jointing, followed by a later deposition of cinnabar and some

pyrite. The calcite veins are irregular in outline and vary in width generally from 6 in. to 2 ft. Grade of ore treated is highly variable.

CONCLUSION

At the present rate of production, and assuming that nothing develops marketwise to slow down the producing rate generally, Oregon's mercury production for 1940 should be close to 10,000 flasks, or more than double the 1939 output. Licenses must now be obtained for export of mercury, and at the present rate of increase in output of the United States, this country will have an excess production in 1940 over normal consumption. Therefore, predictions concerning the market price of quicksilver for the balance of the year may not be made with much assurance, but should there be no great drop in the price, value of Oregon's production will be over \$1,750,000—a jump of over one and a quarter million dollars compared to 1939.

West Virginia Sectional Safety Meet

The eleventh annual sectional safety meet of the New River and Winding Gulf Mining Institute was held at Oak Hill, W. Va., on Saturday, September 14, 1940, in conjunction with other observances by the institute of its 20th year of outstanding service to the coal mining industry.

An address of welcome was given by Mayor Claude Hill of Oak Hill and the response was made by Robert Lilly, who has been president of the institute since 1922, and has been director of all eleven of these annual meets. Several other talks were given by men prominent in the cause of safety. William Easley, State Highway Safety Director, gave the main address of the afternoon. D. L. McElroy, director of the School of Mines at West Virginia University, spoke, as did Al Quinn, who bore the official greetings of Governor Holt, and Dave Ware, Negro Safety Director with the Department of Mines, also spoke to the crowd of several thousands.

An innovation was started in the first aid contest this year. There were no ties, the teams worked seven problems straight through to decide the winners. The winner in the white men's division was the Koppers Coal Company team of Stanaford, W. Va. Victorious in the colored section was an all-mines team from Mt. Hope which was made up of members from the various New River Company Mines in the field.

The climax of the afternoon was a patriotic-safety pageant which culminated the meet. The pageant was timely, colorful, and well-staged, a

combination which impressed the crowd with the necessity for maintaining our freedom to work as a free people, in our own way, as long as we observed the fundamentals of safety which should be inherent within us.

Author Explains Reason for Mercury Flask Weighing 76 Pounds

Paul Hoffman, author of a recent article on "Sidelights on our Weights and Measures" appearing in *Compressed Air Magazine*, has advanced the following explanation as to why the standard unit of weight for mercury is 76 pounds. This explanation, he points out, is a deduction on his part and is not based on actual knowledge of the facts.

"As we all know, the mining of mercury ores was practiced first in Italy and Spain. The Spanish mines, particularly, go back to Roman Empire days and have probably always been the largest producers. We should, therefore, look to Spain for the origin of the weight standard. Now the unit of weight in Spain during the Roman Empire period was the *libra*, equaling about 0.72 English avoirdupois pounds. This was increased eventually—either gradually or by royal decree—to 0.76 English pounds, at which level it stood for probably several hundred years. Parallel with this, another "standard" *libra*, equal to 1.01 avoirdupois pounds, developed. It was adopted by Portugal and most of the Spanish colonies in America, although changed by some of them to 1.02 pounds.

"The newer standard *libra* was subdivided into two *marcos*. Here will be

noticed the connection with the old Danish weight unit, the *mark*, and the later German monetary unit. The older *libra* equaled 1½ *marcos*. The whole history is rather involved and confusing; but the pertinent fact is the existence in Spain, during the middle ages and until fairly recent times, of a standard weight unit, the *libra*, which equaled 0.76 pounds. The riddle is simply answered as follows: 100 of these old *libras*, or a Spanish hundredweight or *central* equals 76 English pounds. The flasks were made to contain a *central* of quicksilver, and this has remained the trade standard."

Coal Men to Meet at Morgantown

A joint meeting of the West Virginia Society of Professional Engineers, the West Virginia Coal Mining Institute, and the West Virginia Coal Conference will be held at Morgantown, W. Va., October 17, 18, and 19.

Chief topics to be considered at the meeting are trends in engineering education, future of coal preparation, trends in coal screening, industrial West Virginia and national defense, trends in burning equipment, problems in dustproofing coal, and the carbonation of coal.

Other discussions of importance will include application of research to West Virginia's natural resources, the future outlook for the state's coal industry, and contributions of the oil and gas industry to the state.

Dr. C. E. Lawall, President of the West Virginia University, will address the delegates on "The New Minerals Industries Building."



NEWS and VIEWS

Government to Purchase \$30,000,000 Tungsten From China

Jesse Jones, Federal Loan Administrator, has announced that the Metals Reserve Company has agreed to buy \$30,000,000 worth of tungsten from the National Resources Commission of China. The tungsten will be delivered over a period of years at prices to be agreed upon from time to time, in accordance with market conditions, as the tungsten is delivered.

Shipments of tungsten and antimony, under terms of the recent contract for 20,000 tons of tungsten and antimony let by the Metals Reserve Company, are now being received. On September 26, 90,000 bags of Wolframite approximating 5,000,000 pounds of tungsten content, and 90 tons of antimony arrived in the United States in the American-flag vessel, *Birmingham City*. Shipment was made by way of Indo-China from the port of Haiphong.

Presentation of Safety Trophies to Coal-Mining Companies Achieving Outstanding Accident-Prevention Records

Presentation of the "Sentinels of Safety" trophy to the Winton No. 1 mine of the Union Pacific Coal Company, winner of the highest award among bituminous coal mines in the national safety competition for 1939, was made at Rock Springs, Wyo., on September 7, by Cadwallader Evans, Jr., vice president and general manager of the Hudson Coal Company, Scranton, Pa. In return, Eugene McAuliffe, president of the Union Pacific Coal Company, Omaha, Neb., will go to Scranton on October 12 to make the presentation of a trophy to the Hudson Coal Company, whose mine at Olyphant, Pa., was given the highest award in the group of anthracite mines participating in the competition. S. H. Ash, Bureau of Mines engineer, will represent Dr. Sayers in the presentation of certificates of honor.

These two presentations of highly prized safety trophies, linking outstanding achievements in accident-prevention work, may be considered highlights in the recognition in this country of notable performances by coal-mining companies in the unceasing effort to improve working conditions underground.

Three hundred and sixty mines and quarries operating in 41 states took part in the national safety competition of 1939, which was conducted by the Bureau of Mines, U. S. Department of the Interior. Outstanding records in the prevention of accidents

Richard J. Lund

Appointed to

National Defense Commission



Richard J. Lund, Editor of Mining Congress Journal for the past three years, has been appointed to the position of Assistant Group Executive in the Mining and Mineral Products Division of the Advisory Commission to the Council of National Defense. Mr. Lund's duties will deal particularly with coordination of work relating to a wide variety of minerals—both metals and non-metals—in the defense program. In this work he is closely associated with Dr. C. K. Leith, Consultant on Minerals to the Commission, and with Messrs. R. C. Allen, H. K. Masters, H. C. Sykes, and E. Vogelsang, specialists on various strategic mineral commodities.

In his work with the American Mining Congress Mr. Lund has made a host of friends throughout the mining and manufacturing industries. His broad knowledge of the mineral field especially qualifies him for this important service to the cause of National Defense.

were recognized in the making of awards to the leaders in each of six groups as follows: Anthracite mines, bituminous coal mines, metal mines, nonmetallic mineral mines, open-cut mines and quarries.

The "Sentinels of Safety" trophies, donated by the *Explosives Engineer* magazine, were awarded to the winner in each of the six groups.

The trophy for anthracite mines was won by the Eddy Creek (Olyphant shaft) mine of the Hudson Coal Company. The mine is in Olyphant, Lackawanna County, Pa., and was operated 626,456 man-hours during 1939 with 27 disabling injuries causing 337 days of disability.

The Winton No. 1 mine in Winton, Sweetwater County, Wyo., was awarded the trophy in the bituminous coal mine group. This mine was operated by the Union Pacific Coal Company for 277,139 man-hours during 1939 without a lost-time accident.

Edward H. Denny, district engineer of the Mine Safety Station of the Bureau of Mines at Salt Lake City, Utah, represented Dr. R. R. Sayers, Director of the Bureau, at the Rock Springs ceremonies in presenting certificates of honor, given by the Bureau of Mines, to each of the 211 employees and officials of the Winton No. 1 mine.

American Zinc Company of Illinois Buys Electrolytic Zinc Plant

The American Zinc Company of Illinois, which is a wholly-owned subsidiary of the American Zinc, Lead and Smelting Company, has purchased from the Evans-Walloway Zinc Company their electrolytic zinc plant located at Monsanto, Ill. Work of rehabilitating the plant has been started and it is expected that the plant will be placed in production in early 1941. The American Zinc Company expects to spend approximately \$500,000 in rehabilitating the plant, and will also install additional roasting equipment at their Fairmont City plant at a cost of approximately \$300,000.

The plant will give employment to approximately 100 men, and will have an annual production capacity of 17,000 tons of high-grade slab zinc.

The American Zinc Company of Illinois now operates plants at Fairmont City, and Hillsboro, Ill.

At the Fairmont City plant ordinary grades of slab zinc, sulphuric acid, and cadmium are produced. The Hillsboro plant produces zinc oxide. The plant just purchased at Monsanto will be confined entirely to the production of high-grade slab zinc.

Coal Division Determines Discounts For Cooperative Organizations

Secretary of the Interior Harold L. Ickes has issued an order determining the maximum discounts which coal producers who are members of the Bituminous Coal Code may pay registered distributors and farmers' cooperative organizations in marketing coal through such channels under the minimum prices and marketing rules and regulations which become effective on October 1, 1940.

Secretary Ickes' order followed his review of the determinations issued by Director Howard A. Gray of the Bituminous Coal Division, which the director made effective simultaneously with minimum prices and marketing rules by an order issued July 19, 1940. The order also determined the rules and regulations for registration of distributors and farmers' cooperatives.

The maximum discount rates, as promulgated by Director Gray, ranged from 5 cents to 50 cents per ton. Secretary Ickes did not change them. However, he did change the director's order so as to permit coal producers to refund to registered distributors and farmers' cooperatives certain taxes which the State of Illinois requires them to pay on coal sales transactions.

Producers may grant discounts, or allowances from the minimum prices, to distributors and farmers' cooperatives who are registered by the Coal Division, as a means of compensating them for marketing their coal. However, as a condition of registration, distributors and farmers' cooperatives must agree not to resell the coal at less than the established minimum prices. Also, discounts may be granted only where the coal is resold in recognized wholesale quantities.

A public hearing on the maximum discount rates was held before a Division Trial Examiner, who on March 27, 1940, filed with the division director a report recommending the prescribing of certain maximum discounts. After hearing oral arguments on exceptions to the examiner's recommendations, and considering the case, Director Gray issued an order on June 19, 1940, prescribing the maximum discounts and making them effective simultaneously with the minimum prices and marketing rules.

The National Bituminous Coal Commission had promulgated regulations for the registration of distributors and farmers' cooperatives before it was abolished and its functions were transferred to the Coal Division on July 1, 1939. These were reviewed by Director Gray, however, and established by him along with the maximum discounts.

The director's determinations then became subject to review by Secretary Ickes. Eight parties filed exceptions with the Secretary in which they sought changes in the director's promulgations.

In his opinion accompanying his order determining the discounts and rules for registering distributors and farmers' cooperatives, Secretary Ickes stated:

"I have considered the director's determination in this matter, the records

and the briefs and contentions of the parties; and I have carefully analyzed the contentions urged by the parties in light of the record and of the director's findings and conclusions. On the basis thereof, I find and conclude that:

"The American Coal Distributors' Association and District Board No. 10 (Illinois) have taken exception to the refusal of the director to provide, as requested by them, that producers be permitted to allow a distributor, in addition to the prescribed maximum discount, an amount equal to such tax as has actually been paid by the distributor under the Illinois retailers' occupation tax.

"The basis for the request was the claim that the tax in question is applicable to sales by Illinois distributors only when the coal sold is produced in Illinois, that such distributors will be unable to pass the tax on to the ultimate consumers, but will, instead, be required to pay the tax out of the discount allowed, and that, if no provision therefore be made, such distributors will be induced to market in

discrimination, the discounts proposed are inadequate, if out of such discounts the distributor must pay the Illinois tax. They cite as an example the fact that the maximum discount permitted for the sale of on-line railroad fuel is 5 cents a ton and that assuming railroad fuel is sold at approximately \$2 a ton, the distributor would become liable to a tax on 3 percent thereof, or 6 cents, whereas his total compensation would only be 5 cents.

"The record does not show clearly whether in the past distributors have received an allowance in addition to the customary discount to cover the amount of tax actually paid by them. Nor is there any certainty that distributors will not be able to sell at above the minimum prices and thereby secure reimbursement from the consumer for the amount of such taxes as they may have to pay. However, I am persuaded that inequity may result if producers are not allowed to reimburse distributors in the amount of the tax, in addition to allowing them the prescribed maximum discount. In the first place there is no indication whatsoever that the incidence of the tax was taken into account in fixing the maximum discount. In the second place, it does not appear that the ruling of the Illinois Department of Finance extends the tax to every type of transaction involving competition from coals produced in a State other than Illinois; nor does it appear that the validity of that ruling has been established. In view of these considerations and of the vigorous representations by the District Board and the Association, to which no objection has been made, that both distributors and producers would suffer substantial injury from a failure to grant the request, I find and conclude that the request should be granted and that the schedule should provide as follows:

"In addition to the allowance of a discount not in excess of the maximum prescribed herein, a code member may reimburse a registered distributor for such tax upon the resale of the coal by the registered distributor as has actually been paid by the latter under the retailers' occupation tax of the State of Illinois, such reimbursement to be made, however, only upon satisfactory showing to the code member by the registered distributor that such payment has actually been made by him."

Except for the above change, and certain clarifications of points in the director's order, Secretary Ickes states that he found and concluded "that the findings of the director and the maximum discounts and the rules and regulations prescribed by him are in all respects proper, and I hereby approve and adopt said findings, maximum discounts and rules and regulations. I further find and conclude that except as above noted, the exceptions filed with me should not be granted."

The exceptions granted were those filed by the American Coal Distributors' Association and the Producers Board for District 10 (Illinois) pertaining to the Illinois tax problem. Those denied included objections to certain provisions of the director's promulgations which had been filed by



—The Washington Post

Illinois coal produced in other states on which the State tax is not applicable. In reliance upon the regulations of the Illinois Department of Finance, the director concluded that coal distributors will be subject to precisely the same tax in Illinois regardless of whether the coal was produced within or without Illinois and that therefore the claim of prejudice could not be substantiated. He provided, however, that if after prices were established, it developed that Illinois producers marketing their coals through Illinois distributors were at a substantially competitive disadvantage, by reason of this tax, the determination might be modified by him either upon his own motion or upon the petition of a party eligible under the terms of the jurisdiction which the director reserved to himself in the order. Both the Association and District Board 10 urge further that, apart from any question of

the Producers Board for District 1 (Central Pennsylvania, Maryland and part of West Virginia), District 8 (Southern West Virginia, Eastern Kentucky, and parts of Tennessee and Virginia), District 17 (Western and Southern Colorado), and C. H. Sprague & Son Company of Boston, Mass.

The approved maximum discounts, which range from 5 cents per ton to 50 cents per ton, vary because of many factors. Among them are the geographical location of the markets, the requirements for coal therein, the volume of tonnage moving, the kind, quality and sizes of coal, the distances which the coal must be shipped, the methods of transporting the coal, the type of trade to which the coal moves, and the uses to which the coal is put, the sales commissions and discounts which been paid in the past for the same and for competing coals, and the cost experienced and services rendered in the distribution of coal through other channels.

In the Appalachian field the maximum discount prescribed is 12 cents a ton where coal is sold by a producer to a registered distributor for resale direct to a consumer, excepting a railroad. In general, these discounts cover the sales to large volume buyers of coal for industrial use.

But where the distributor buys coal from a mine for resale to retail coal dealers, through which the general public buys coal for heating its homes and shops, a more liberal discount was prescribed. On purchases of this type, discounts of from 17 to 25 cents a ton, depending upon the locality, were prescribed for lump and "double-screened" coals, which include those generally used for heating homes. Discounts of from 17 to 20 cents a ton were prescribed for the other sizes resold to retail coal dealers.

Throughout the remainder of the country, where coal generally is sold in less volume, higher discounts are prescribed. The maximum discounts prescribed for small size (industrial) coals produced in the mid-West range from 12 to 25 cents a ton, depending upon the area where sold and other factors, while those for the prepared sizes range from 17 to 50 cents a ton. In the far West, where sales volume generally is still smaller than in the mid-West, the maximum discounts



An interesting application of Plastikon rubber putty has been made in the electrolytic tank house of the copper refinery of the Phelps Dodge Corporation at El Paso, Tex. Faced with operating conditions under which ordinary putty hardened and cracked, rubber putty was tried and over 6000 lbs. have been applied. Condensation of moisture containing some acid, from the 1,162 tanks shown in the picture, on the windows and sash created a condition which the use of ordinary putty could not overcome

range from 12 cents to 25 cents a ton on the small size (industrial) coals, while those for the prepared sizes of coals range from 25 to 50 cents a ton.

In all instances where the distributor resells the coal to the railroads the maximum discount prescribed is limited to 5 cents a ton if the mine is located on the purchasing railway's lines and 10 cents a ton if it is not.

Employment and Accidents at Iron-Ore Mines in the United States, 1939

Employment at iron-ore mines in the United States recovered sharply in 1939 from the severe decline of 1938 but it did not return to the 1937 level. The number of men employed was 19,769, an increase of 1,763 over the number working in the preceding year, according to figures released by the Bureau of Mines. Total man-hours worked by all employees was 35.7 million, representing

a gain of 7.2 million man-hours over the total volume of labor performed in 1938. The year's operations resulted in an average of 225 workdays per employee, an increase of 28 days per man over the average working time in 1938.

Accidents in and about the mines resulted in 23 deaths and 602 nonfatal lost-time injuries among the employees. These figures indicate a death rate of 0.64 and an injury rate of 16.87 for each million man-hours worked by all employees at all mines during 1939. The fatality rate compared favorably with the rate of 0.70 for 1938, but the nonfatal-injury rate was somewhat less favorable as the rate for 1938 was but 15.99.

In underground mining the most important States, from the viewpoint of numbers of men employed and the number of man-hours worked, were Michigan, Alabama, and Minnesota. Minnesota outranked all other States in the number of men employed in mining by open-pit methods.

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Metal Mining Registers Gains in California in 1939

Walter W. Bradley, State Mineralogist, has announced that compilation of the final returns from the mineral producers of California for 1939 has been completed. Total value shown for the year was \$352,462,564, being a decrease of \$27,982,392 from the total of 1938 which was \$380,444,976, the decrease being due to petroleum. There were 62 different mineral substances, exclusive of a segregation of various stones grouped under gems; and all 58 counties of the State contributed to the list.

During 1939 the following changes were reflected in comparison with the previous year: The metal and industrial-materials groups showed increases in total value, while fuels, structural materials, and salines showed a decline. Of the year's mineral output gold showed the greatest increase in value, followed in turn by copper, brick and hollow building-tile, tungsten ore, quicksilver, lime, magnesite, cement, limestone, borates, talc and soapstone, silica, and salt; while those showing decreases in amount and value were petroleum, potash, miscellaneous stone, and mineral water. Returned to the commercial list after several years' absence were antimony, molybdenum, titanium ores, and strontium.

Of the metals all materials under this grouping showed an increased value of output with the exception of platinum and iron ore. The gold production increased from 1,311,129 to 1,435,264 fine ounces, and in value from \$45,889,515 to \$50,234,240; copper from 1,613,491 lbs. worth \$158,122, to 8,390,215 lbs. worth \$872,582; tungsten from 46,107 units worth \$786,860 to 74,110 units worth \$1,153,735; quicksilver from 12,171 flasks worth \$846,497 to 11,201 flasks worth \$1,102,563; and silver from 2,590,804 fine ozs. worth \$1,674,863 to 2,599,139 fine ozs. worth \$1,764,264. The 1939 gold value was the greatest since 1856, while that of chromite, antimony, and tungsten ore was the greatest since 1919 that of molybdenum ore being greater than the total of all previous output.

In the industrial group the total value increased from \$5,027,093 to \$5,622,439, with gypsum, limestone, pumice and volcanic ash, silica (quartz and glass sand), and talc and soapstone reaching all-time highs in annual production.

Anthracite Section AIME Plan Meeting

At a meeting held recently at Hazleton, Pa., the executive committee of the anthracite section of the American Institute of Mining Engineers adopted plans to hold three meetings during the coming season. The first of these gatherings will be held at Wilkes-Barre during the latter part of October and the subjects for discussion at this meeting will be modern methods of driving rock tunnels and the water drainage problem now threatening the anthracite industry.

Colorado and New Mexico Coal Operators Elect Officers

The Colorado and New Mexico Coal Operators Association, meeting in Denver, Colo., reelected the following officers to serve for one year: N. C. Anderson, president; W. J. Thompson, vice president; F. O. Sandstrom, secretary-treasurer, traffic manager.

Elected to serve as directors of the association for a one year term were: N. C. Anderson, J. S. Bowie, Geo. B. Dick, C. R. Garrett, Homer Harris, Moroni Heiner, Harry Mack, Douglas Millard, W. G. Moore, E. M. Oliver, B. W. Snodgrass, J. P. Thomas, Jr., W. J. Thompson, L. C. White, Kenneth Wood.

Novel Device for Collecting Air Samples Developed

A novel device for collecting air samples in inaccessible places has been developed by the Bureau of Mines.

The device, which uses an ordinary snap-type mousetrap for breaking the tip of a vacuum sampling tube, is described in a report published recently by the Bureau. The device may be used to collect samples of the atmosphere in mine shafts where there is provision for descent or ascent, in sewer manholes, in gas or water wells, in empty oil tanks, and in sealed areas in mines.

The device consists of a snap-type mousetrap mounted on one end of a block of wood in such manner that, when the device is given a sharp jerk, a lead weight attached to the trigger will spring the trap and break the tip of a vacuum tube mounted on the other end of the block. The device is enclosed in a strong wire gauze covering to keep the tube from breaking while it is being lowered or raised in a shaft or other places.

To collect a sample, the device is lowered by a brass wire to the point where it is desired to take the sample; a sharp jerk on the wire will spring the trap and break the tip of the vacuum tube.

Appalachian Coals, Inc. Holds Coal Exhibit

A coal exposition featuring samples of modern coal-burning equipment and products of coal was held at Cincinnati, Ohio, under the auspices of Appalachian Coals, Inc., Cincinnati Coal Exchange, Coal and Coke Merchants, Credit Association, Greater Cincinnati Stoker Association, Solid Fuel Institute, coal-burning equipment manufacturers and coal-carrying railroads, from August 20 to September 22.

Approximately 50,000 people registered at the exposition, which sought to tell the story of coal to the thousands of persons in the greater Cincinnati area.

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Mining engineering degree from technical school in high standing required; high scholastic record; some years experience in underground mechanized bituminous coal operations; desirable if experienced in modern mining methods, standard cost measurement and underground material handling.

★ ★ ★

In sending personnel record, include complete description of education, experience, age, marital status, religion, compensation and recent photograph.

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Transporting Borax from mine and refinery in Death Valley across more than 160 miles of sun-baked desert

Pacific Coast Borax Company Celebrates 50th Anniversary This Month

Marking the completion of a half century of service in one of America's most colorful industries, the Pacific Coast Borax Company will celebrate its golden anniversary through October.

"Coincidentally, the fiftieth anniversary will celebrate the famous company trade-mark which has captured the imagination of generations of Americans," F. M. Jenifer, president, stated. "The 'Twenty Mule Team,' inextricably associated in the public imagination with the pioneer days of our country, is as familiar to millions as the names of great Americans. It is equally a symbol of the leadership assumed early in the history of the Borax industry by the Pacific Coast Borax Company.

"In fact the progressive history of the borax industry in this country has been largely the history of the Pacific Coast Borax Company, pioneer in the industry," it was also stated. "Incorporated in 1890, the company has been constantly engaged for half a century in the discovery, mining, refining of borax and in the development and manufacture of borax products, it was pointed out, and is today the largest unit in an industry whose products are finding constantly greater application.

"In the span of 50 years since the company has incorporated, it has seen the use of borax steadily increase from drug purposes until today this product of the desert has countless essential uses in the home, in agriculture, and in industry. In fact, it would be difficult to name an important industry to whose products borax does not contribute, from leather to pottery, from glassware to metals, from enamels to

textiles. Due to constantly greater demand for borax, greater production, and improved mining, refining and transportation methods, bulk prices of borax for industrial uses have been progressively lowered; borax prices in the latter part of the 19th century were 1200 percent higher than they are today. Total consumption has increased from only a few hundred pounds a year to thousands of tons annually. The company is proud of its record and that of the borax industry."

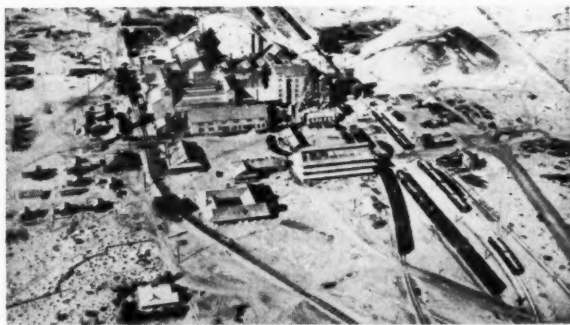
Although incorporated in 1890, the history of the Pacific Coast Borax Company may be said to have begun on a day in 1881 when Aaron Winters, an aging prospector, together with his half-Spanish wife Rosie discovered borax in the dry desert marshes on the floor of Death Valley. Trembling with hope, Winters fired the chemical used to identify borax, then shouted, "She burns green, Rosie! We're rich." Winters sold his claim to W. T. Coleman of San Francisco who established the Harmony Borax Works near the mouth of Furnace Creek. It was to carry the precious borax ore from Death Valley across more than 160 miles of blistering desert to the railroad at Mojave that the great 20-mule team trains were developed. Probably the largest wagons ever built, two of them together were capable of transporting 24 tons of borax, equal to a railroad carload.

From the time borax works were established in Death Valley the history of the Pacific Coast Borax Company has been the story of the search for new and richer ore deposits and the development of efficient means of borax transportation and of improved mining and refining methods. Subsequently new deposits of borate of lime called colemanite were discovered

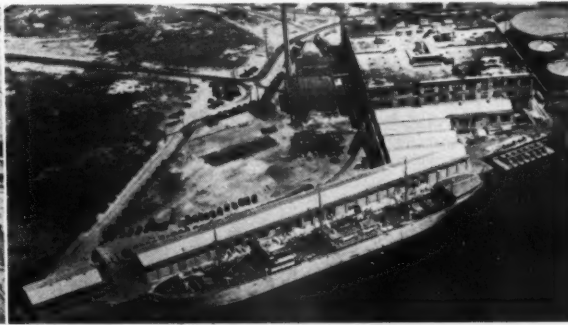
in ore form which was purer and also more easily worked than surface deposits, and the company moved its operations to Borate, Calif., convenient to the Santa Fe Railroad in the Calico Mountains southwest of Death Valley. Here what is believed to have been the first calcining plant in California was established, ore being carried over a narrow gauge railroad from mine to plant in small cars drawn by a sturdy little locomotive named "Francis."

When the borate deposits at this location had been worked out, the company again moved back into the vicinity of Death Valley, mining borate minerals in the Black Mountains and Funeral Mountains in and around Ryan, Calif. With the construction of the Tonopah & Tidewater Railroad which skirts the eastern rim of Death Valley, first railroad to penetrate the Death Valley region, a 20-mile narrow gauge railway was built from Death Valley Junction to the company's mines. Known as the Death Valley Railroad, it was considered one of the engineering marvels of its day because of the steep grades, the rough character of the country, and the dangers from cloudbursts which had to be overcome.

It was not until 1927 that the Pacific Coast Borax Company moved to its present location at Boron, near Kramer, Calif., more convenient to the seaboard, where a large deposit of borate of soda known as rasorite had been discovered by C. M. Rasor, the company's field engineer. From the calcining plant at Boron, borax ore today is transported to one of the country's largest borax refineries at Wilmington, Calif., where it is refined, manufactured into 20-Mule Team products, and shipped throughout the world.



Modern calcining plant is located directly above the Company's borate of soda deposits. Ore is passed through the calcining process, and shipped by railroad to the Company's refinery at Wilmington, Calif.



Refinery at Wilmington, Calif., in Los Angeles Harbor. Here borate ore is refined and products are shipped throughout the world

Coal Prices Effective October 1

Secretary Ickes closed the record of appeals on minimum coal prices and declared these prices effective October 1.

Effective November 15, a marketing rule which would have limited contracts to 30 days, was rescinded by Secretary Ickes who decreed that after that time contracts may extend to a year or longer with specific permission of the Interior Department's Coal Division.

Lehigh Coal & Navigation Moves Offices

General offices of Lehigh Coal & Navigation Company after October 1 will be located in the Fidelity Philadelphia Trust Building, 123 South Broad Street, Philadelphia, Pa.

— BOOK REVIEW —

MINES REGISTER—Successor to The Mines Handbook, 1940 Edition (Vol. XX). Atlas Publishing Co., New York, N. Y. 942 pages. \$25.

In the three intervening years since the last issue was published a great many changes have taken place in the non-ferrous metal mining industry in the United States, Canada, Mexico and South America. Due to the war many dormant mines have been brought into production and active mines have accelerated their output. New mining companies have been formed and important changes have taken place in the personnel of mining companies. There have also been changes in production costs, earnings, financial setup, methods of mining, listing of securities and security values. All these changes have been checked so that the 1940 edition presents a complete revision of the previous issue and contains the latest authentic information.

The new edition contains a description of more than 7,000 active mining companies and lists more than 24,000 inactive mines. The total represents an increase of more than 30 percent in comparison with the number listed in the 1937 edition. For the convenience of the reader, the new edition has been divided into four sections as follows:

Section 1, description of active mining companies in the Western Hemisphere.

Section 2, description of some of the largest mining companies located in different parts of the world.

Section 3, information on mining

PETER F. LOFTUS

Consulting Engineers

ENGINEERING AND ECONOMIC SURVEYS, ANALYSES AND REPORTS ON POWER APPLICATIONS AND POWER COST PROBLEMS OF THE COAL MINING INDUSTRY

Oliver Building Pittsburgh, Pa.



Clean Your Coal the R&S Way—

Whatever your preparation needs may be
our engineers can find the proper answer

- Coal Cleaning by Air Process
- Combination Wet and Dry Cleaning Plants
- Complete Coal Washing Plants
- Coal Dryers
- Dedusting Plants
- Coal Tipples
- Revolving Dumps
- Car Feeders

Write for Bulletin No. 153

ROBERTS AND SCHAEFER CO.

307 North Michigan Avenue Chicago, Illinois

P. O. Box 865, Pittsburgh, Pa.
P. O. Box 570, Huntington, W. Va.

companies that arrived too late to be included in Section 1.

Section 4, inactive or dormant mines.

The 1940 edition of the *Mines Register* also contains a comprehensive statistical section dealing with metal production, consumption, imports, exports, price trends, etc.

A special section is devoted to listing mining engineers, mine managers, superintendents and purchasing agents. Another section is devoted to listing metal mining securities, giving the name of the security, the exchange on which they are traded and the high and low prices from 1931 to 1939.

PUBLICATIONS OF INTEREST

U. S. BUREAU OF MINES

R. I. 3513. CONCENTRATION OF MANGANOSIDERITE ORE FROM LEADVILLE, COLO., by F. D. DeVaney and S. M. Shelton. 6 pp. 3 tables.

R. I. 3515. PROGRESS REPORTS—METALLURGICAL DIVISION—39. ORE-TESTING STUDIES. II. Primarily Precious Metals, by Edmund S. Leaver, Jesse A. Woolf, and A. P. Towne. 76 pp.

R. I. 3516. DARKENING LIGHT-COLOR SOILS WITH COAL-MINE WASTE, by S. J. Broderick. 6 pp. 1 fig.

R. I. 3518. AN EXPERIMENTAL STUDY OF THE IGNITION OF FIREDAMP-AIR MIXTURES BY EXPLOSIVES, by Etienne Audibert. 6 pp. 4 figs.

R. I. 3523. DIFFERENTIAL GRINDING OF ALABAMA IRON ORES FOR GRAVITY CONCENTRATION, by Will H. Coghill and Philip H. Delano. 6 pp. 4 tables.

R. I. 3526. NATIONAL SAFETY COMPETITION OF 1939, by W. W. Adams and T. D. Lawrence. 36 pp. 16 tables.

I. C. 7111. OPERATIONS AT THE HAILE GOLD MINE, KERSHAW, S. C., by Edmund Newton, D. B. Gregg, and McHenry Mosier. 42 pp. 8 tables. 12 figs.

I. C. 7113. METHODS OF SAMPLING AND ANALYZING COAL-MINE DUSTS FOR INCOMBUSTIBLE CONTENT, by C. W. Owings, W. A. Selvig, and H. B. Greenwald. 12 pp. 5 figs.

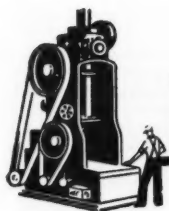
I. C. 7125. MINERAL INDUSTRIES SURVEY OF THE UNITED STATES, COLORADO LAKE COUNTY: POSSIBILITIES OF MANGANESE PRODUCTION AT LEADVILLE, COLORADO, by J. H. Hedges. 23 pp.

I. C. 7129. PETROGRAPHIC METHODS AND THEIR APPLICATION TO THE EXAMINATION OF NONMETALLIC MATERIALS, by George T. Faust and Alton Gabriel. 15 pp. 6 tables. 1 fig.

MISCELLANEOUS

Circular No. 5. GOLD MINING AND GOLD DEPOSITS IN NEW MEXICO, by E. H. Wells and T. P. Wootton, April, 1932. Revised by T. P. Wootton, April, 1940. Published by the New Mexico School of Mines, State Bureau of Mines and Mineral Resources. 24 pp.

ANNUAL REPORT FOR THE YEAR 1939, State of Colorado, Bureau of Mines. 85 pp.

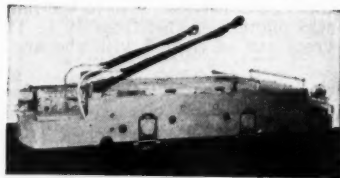


MANUFACTURERS' Forum

New Explosion Tested Mining Locomotive

For use in both high and low coal, a new explosion-tested mining locomotive has been announced by the Westinghouse Electric & Manufacturing Company.

To operate in low coal, it is only necessary to remove the hand rails. The cam type controller is arranged for low height operation and the drums operate on a horizontal plane. The main drum is equipped with dynamic



braking. The forward and reverse movements are generally obtained by means of main and reverse handles although reversing operations from a single handle can be supplied.

A trip riders' compartment extends across the full width of the locomotive.

These locomotives are equipped with 33-hp. explosion-tested motors, cam controllers, gearless cable reel, anti-friction journal bearings, steel-tired wheels, flush-type plate side frames, control Breather and complete electrical and mechanical details.

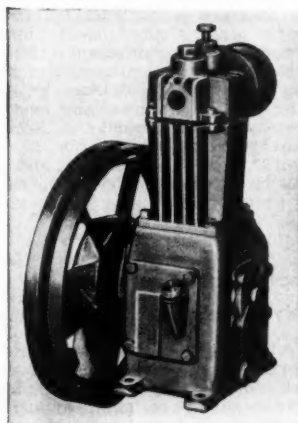
The dimensions of the locomotive are: track gauge, 48 in.; wheel base, 56 in.; length excluding bumpers, 13 ft. 2½ in.; height excluding trolley, 31 in.; and overall width, 69½ in.

For additional information write to Department 8-N-48, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

New Line of Small Air Compressors

Supplementing its line of portable and stationary air compressors, the Sullivan Machinery Company is now offering a group of compressor units in smaller sizes. The new line, known as Type "Q", is applicable for industrial, garage and Diesel starting service. The units are air cooled, single and two stage, and range in capacity from 2.8 to 45.7 cfm., ½ to 10 hp., with operating pressures (continuous) 100-200# and (intermittent) 150-500#. The smallest unit is 10½x14x18 in. high, the largest 20½x19½x25½ high.

These "Q" compressors have cushioned air valves, balanced crankshaft,



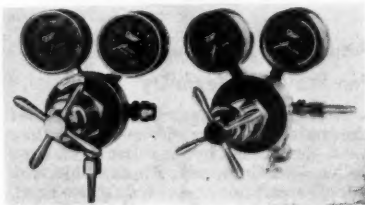
taper roller main bearings, Lynite connecting rods, semi-steel pistons, positive lubrication, copper inter-cooler, chrome nickel cylinders and dust-proof crankcase. Automatic starting can be furnished.

Units are available bare, base mounted or tank mounted, for V-belt drive from motor or air cooled gasoline engine. Units for Diesel starting may have combination motor and gasoline drive, so arranged that the belt can readily be shifted to the gasoline engine in case of current failure.

Write for Bulletin A-33, Sullivan Machinery Company, Michigan City, Ind.

New Oxweld Regulators

The Linde Air Products Company, a unit of Union Carbide and Carbon Corporation, announces the addition of three new single-stage, general service regulators to its Oxweld line of welding and cutting apparatus. These



regulators, the Oxweld R-80 oxygen regulator for the delivery of oxygen at working pressures up to 200 lb. per sq. in., the Oxweld R-81, its companion acetylene regulator, and the Oxweld R-82 fuel gas regulator, feature simplicity of design and reliability of operation.

The R-80 and R-81 regulators are of the stem type—that is, the valve closes with the incoming pressure, thus assuring positive seating action. The materials used for the valve seats are selected for efficient service and long life. The passageways are of sufficient size to permit unrestricted flow of gases. In addition, the R-80 oxygen regulator has a special inlet screen formed of a double thickness of fine mesh to filter out dirt and foreign particles.

The third regulator, the new Oxweld R-82 fuel gas regulator, also is of the stem type and is for use with various other gases, such as "Pyrofax" gas, propane, and butane. It has the same operating advantages and construction features as the R-81 acetylene regulator.

Two New Products

Two bulletins have just been issued by Mine Safety Appliances Company describing two new additions to the company's line of Velocity-Power Tools. The tools are the M. S. A. Velocity-Power Rail punch and the M. S. A. Velocity Power Cable Splicer.

The rail punch is a self-contained, portable tool for punching holes for track bolts and rail bonds. Operation is said to be quite simple. With proper punch and die installed, the velocity-power punch is placed at desired location on rail. A hand-firing hammer discharges a small blank cartridge in the breech unit and drives the punch through the rail web. The finished hole, it is claimed, is clean, smooth, free of burrs, and with practically no taper. The punch is compact and readily portable, weighing only 42 lbs. and measuring approximately 9½ x 16½ x 4½ in. overall.

The M. S. A. velocity-power cable splicer is a new, modern tool designed for making repairs on all types of mining-machine cables safely, effectively, and with expenditure of a minimum amount of time and effort, it is claimed. The cable splicer weighs only 6 lbs fully assembled. Operated also by a cartridge discharge, the unit compresses a copper sleeve tightly about the two butted ends of a broken cable, giving a splice of small diameter, which allows application of full insulation. The short connection does not impair flexibility of the cable and gives full current-carrying capacity and high percentage of mechanical strength.

The company has also issued a new bulletin describing its special Edison electric cap lamps.

Featured unit is the Edison permissible electric flood lamp. This

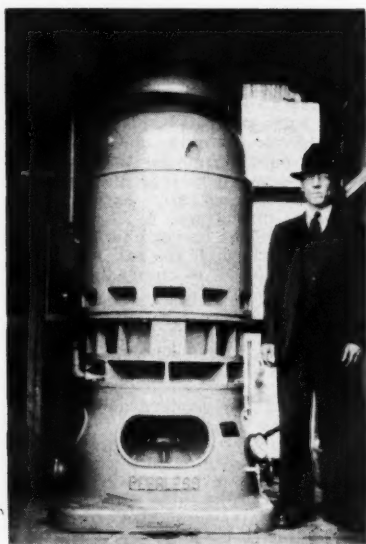
Model "E" floodlight, approved by the U. S. Bureau of Mines, consists of six Type M-14 Edison cells arranged in a steel battery container. The lamp is equipped with fuse, Yale-type lock, safety lens, and safety bulb mounting. It is available with either matte-surfaced reflector for floodlighting or polished reflector for spotlighting. Also described in detail are the company's five standard permissible electric hand lamps, M. S. A. special hand lamps, Edison permissible electric trip lamps, Edison electric mule or cage lamps and rectifiers for charging Edison mine lamp batteries.

Bulletins describing both M. S. A. velocity-power tools—the rail punch and the cable splicer, and the special Edison electric cap lamps—may be had by writing this publication direct, or to Mine Safety Appliances Company, Braddock, Thomas and Meade Streets, Pittsburgh, Pa.

Pennsylvania Coal Company Dewatering Old Workings

After deciding to reopen abandoned workings which had caved in years ago, engineers of the Pennsylvania Coal Company at Scranton, Pa., were confronted with the problem of quickly dewatering the lowermost levels. Selecting a low surface point over the abandoned workings, they drilled a 24-inch borehole down through the broken strata and lowered the whole table to a controlled point.

A Peerless direct-connected turbine pump with a setting of 240 feet was



installed. Operated by a 300-horsepower motor, it is producing 3,600 gallons of water per minute, carrying a heavy percentage of solids, or 2905 p.p.m. Before lowering the pump column into the well, it was sprayed with hot bitumastic at the flanged joints, the pipe having been pre-spum hot.

The pump is equipped with a series of bowls and impellers, the latter being protected with a double seal to compensate for wear caused by the

heavy solids in suspension. A 24-inch discharge pipe transmits the water from the pump for a distance of several hundred feet to a point of disposal. The installations were made at Duryea, Pa., under the direction of the Bittenbender Company, agents for Peerless Pump Company.

Contract Awarded

Koppers-Rheolaveur Company has been awarded a contract by United Electric Coal Companies to install stoker coal-sizing equipment and make changes in the coal preparation plant of its Fidelity Mine, at Duquoin, Ill.

The new equipment and changes will increase the capacity to 200 tons of washed stoker coal per hour.

Work is now underway and the plant is expected to be in operation by November 15.

Neoprene on Shoes as Safety Feature

Preliminary reports on the use of neoprene soles and heels on work shoes indicate that this material will increase safety in many industries, according to E. I. du Pont de Nemours & Company, manufacturers of neoprene.

Soles of this chemical rubber were tested by workmen in 27 industries where oil, heat, acids, caustics, blood, gasoline, grease, crude oil, and animal and vegetable fats and oils were present.

The neoprene-soled work shoes are reported to have outworn other soles from two to five times, depending upon the wearer and the attacking substance to which the soles were subject.

The industries covered in the survey, all of which reported longer wear or greater safety, or both, were: steel manufacture, machinery manufacture, oil producing and refining, meat packing, food processing, aircraft, automobile, brewing, limestone and cement, tools, railroads and street railways, abrasives, ice, chemicals, pigments, paint, rayon and "Cellophane" cellulose film, electrical machinery, soy-bean products, groceries, soap, glass, service station, letter carriers, milk, and acetylene.

Adjustable-Pitch Ventilation Fan Provides Flexibility

A specially-designed modification of the patented "Tear-Drop" blade has been developed by the Hartzell Propeller Fan Company, Piqua, Ohio, for mine ventilation. According to E. C. Englert, sales manager of the company, this development gives exceptionally high air deliveries against heavy back pressures, at slow tip speeds.

This new blade is used in conjunction with the company's variable-pitch hub, which allows the use of from three to twelve blades and at the same

time variations in pitch to give exactly the air required.

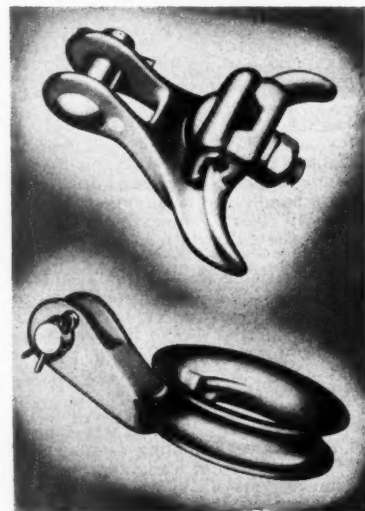
The new blade is cast and machined of aluminum alloy, and is made to resist damage from mis-handling. Blade adjustment is extremely easy, a small wrench being the only tool required.

The Hartzell Charavay Mine Fan uses the patented Charavay Air-Seal Ring, with which the propeller tips overlap an encircling ring.

The fan is made regularly in sizes ranging from 36 to 130 inches diameter, and is built to special order in other sizes.

Clevis Turned on Angle Clamp and Thimble

Supplementing the angle clamp and dead-end thimble designs in which the clevis is parallel to the conductor, the Ohio Brass Company, Mansfield, Ohio, has brought out designs with the clevis at right angles to the conductor. These new devices were developed for users who prefer to have more flexibility in the vertical than in the horizontal plane. Angles from 10 to 120 degrees can be turned with the angle



clamp without dead-ending the conductors and using jumpers. No parts need be removed for attaching a conductor because it is a one-piece assembly in effect. It will accommodate any conductor from 0.162 to 0.600 in. The dead-end thimble has an open seat which is in line with the clevis and therefore the conductor's line of pull. This device is suitable for dead-ending, angle construction and making branch line taps. Both devices are made of malleable iron, hot-dip galvanized.

New Stopehamer

Ingersoll-Rand has just announced a new 116 pound "Balanced for Easy Handling" stopehamer with automatic rotation, known as the R-58. The center of gravity of this stopehamer is



such that the machine assumes a natural drilling position when it is picked up. This facilitates raising the machine to any operating position.

Other "Ease of Handling" features include: feed-leg control which permits many fine variations in feeding power; short overall height of only 59 in. prevents the drill from being top-heavy; a plate-type throttle valve provides half throttle position for "collaring" holes; and the location of the exhaust on the opposite side of the cylinder from the operating controls.

One of the many durability features is an automatic chuck cleaning system which keeps the drill free from cuttings and water and at the same time provides ample lubrication for all front-head-bearing surfaces.

An 8-page illustrated booklet, including a disassembled view is available from Ingersoll-Rand Company, 11 Broadway, N. Y., or any of its branch offices. Send for Form 2647.

G-E Electrostatic Voltmeter Detects 37,000 Volts on Power Plant Motor Belt

Static electricity in a powder plant can be a very troublesome hazard, so a well-known chemical company recently conducted tests with a General Electric electrostatic voltmeter to find out the extent of the static electricity generated on their conveyor belts, motor drive belts, rubber-tired trucks, and from actual walking on floors. In checking the V-belt of a 25-hp. motor, the 20,000-volt static voltmeter went off scale—observation of the discharge spark indicated the presence of approximately 37,000 volts on the V-belt. Another test indicated that 6,000 volts were generated simply by walking across the carpet of an office.

These preliminary tests led to more extensive checks in all of the chemical company's plants. As a result, belt dressings were investigated to find one of a conducting nature that would permit a continuous discharge of accumulated static electricity.

All trucks were equipped with grounding chains, various types of flooring were investigated, and many other changes were made to minimize the hazards of explosion from static electricity.

The G-E electrostatic voltmeter used in detecting the static is a 20,000-volt portable instrument designed for both a-c and d-c measurements of voltage on systems where one line is grounded. Operation is simply a matter of grounding the case, energizing the light source, and making the high-voltage connection.

New Conveyor Belt

A conveyor belt made of 48-oz. duck has been produced by the U. S. Rubber Company. It is reported to be the largest single unit slope conveyor belt in the world. It is now in operation in the Fifth Vein Coal Company, of Harrisburg, Ill., where it was installed by the McNally-Pittsburg Mfg. Co., of Pittsburg, Kans., who supplied and erected this plant.

The belt is a 9-ply Matchless, 1,530 ft. long and 54 in. wide, weighing 35,000 lbs. net. It conveys 1,000 tons per hour run-of-mine coal at a speed of 350 ft. per minute from underground hopper and feeders which receive the coal from the mine cars in the coal seam and lifts it 206 ft.—equal to the height of a 20-story building—to the preparation plant up a slope of 16.5 degrees.

Among the advantages cited by the company for this belt are:

(1) It has a soft weave with special strength characteristics; (2) it takes the friction as easily as all former standard conveyor ducks; (3) handles 60 lbs. safe strain per inch per ply, or one-third more than 42-oz.; (4) it makes possible the use of conveyors one-third bigger than before attainable, thus permitting installation of single units of greater lengths, lifts, and tonnage; (5) cost per pound is no greater than standard ducks of lesser weight.

Besides the coal and stone industry, U. S. Matchless with 48-oz. duck has also been furnished for a large installation in the Birmingham district handling red ore, and its value is recognized in still other industries for bigger jobs in the transportation of material.

Develop New Air Hose for Excessive Hot Oil Service

Recommended for use where excessive hot oil conditions are encountered, the B. F. Goodrich Company, Akron, Ohio, announces the addition of a new air hose made with a synthetic tube and rubber cover. It is known as Type 54.

Laboratory tests, it is said, indicate that the synthetic tube used in this construction should give two to three times longer service life when exposed to the same conditions as a tube made of natural rubber. The hose is built with a smooth green abrasion resistant cover.

Fluid Drive Adapted to Mining Use

Fluid drives—the year's big news in the automotive industry—are also making news in many other fields, according to C. T. Morse, president of the American Blower Corporation.

A Euclid truck with an American Blower traction type fluid drive (hydraulic coupling) is now in service in the Minnesota Iron Range. In the same area, a Harnischfeger 2½-yard shovel with fluid drive is successfully operating.

A big dredge working in the Tennessee River has just had its cutter head equipped with a size 15 traction

type fluid drive. The first day's run of 418 tons was said to be more than 7 percent better than the best previous day's run without the fluid drive.

A strip conveyor in a Cleveland steel mill, equipped with fluid drive, is making the longest run without breakdown in its history.

40 Ton Pusher Locomotive

The H. K. Porter Co., Inc., Pittsburgh, Pa., has recently constructed a 40-ton pusher locomotive. Designed for use on 42 in. narrow gauge track laid between two standard tracks, the locomotive is fitted with two pusher arms which, in operation, swing out behind freight cars on the regular tracks, pushing them along as the pusher locomotive moves ahead.

The new locomotive is powered by



two 100-h.p. Westinghouse mill type motors, fitted with double reduction gear drives and enclosed in cast steel housings. Current is supplied by collector shoes on a third rail. All shafts are mounted on anti-friction bearings and motors are ventilated by filtered air being forced over them at the rate of 2400 c.f.m. This latter operation is accomplished by means of an electrically operated conoidal fan.

Both brakes and pusher arms are operated by a 25 cu. ft. electrically driven air compressor. Brake bands are placed on drive shafts between motors and transmissions, a feature which, it is said, makes for less wear on wheel flanges and consequent economies. Additional features are the electrically heated cab, floored with ebony asbestos wood for longer wear and safer use; and electrically heated sand boxes.

Size of the locomotive is 36 ft. long by 15 ft. high by 51 in. wide. It weighs 80,000 lbs., and has a rated tractive force of 20,000 lbs., with a maximum tractive force of 30,000 lbs. Additional information and specifications will be supplied by the manufacturer upon request.

Ball Bearing Lubrication

As an aid to choice of the lubricants for ball bearings, New Departure, Division General Motors Sales Corporation, offers a 15-page booklet covering the selection and application of both oils and greases. Particularly useful is a simple method of determining the proper grade and viscosity of oil for various operating temperatures and bearing speeds. Also, a discussion of the composition and use of greases with reference to their relative suitability under different speed, temperature and moisture conditions.

The VALUE of SECTIONALIZING with

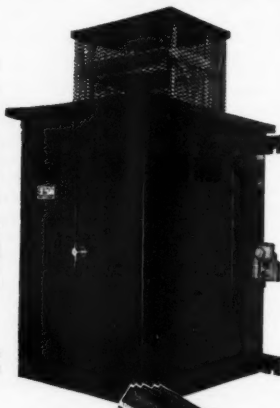


AUTOMATIC RECLOSING CIRCUIT BREAKERS

Raise production; reduce fire hazard; lower maintenance charges; decrease total energy consumption and power demand. These advantages with Automatic Reclosing Circuit Breakers are fully described in I-T-E bulletins based on actual installations in mines.

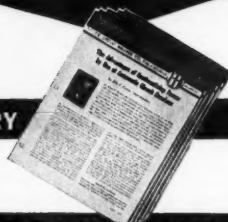
At right—Each circuit breaker controls a section, confining disturbances to the area in which they arise.

Representatives in
Principal Mining Areas



BULLETINS TELL THE STORY

These bulletins deal with a variety of mining conditions. Copies will be gladly furnished on request.



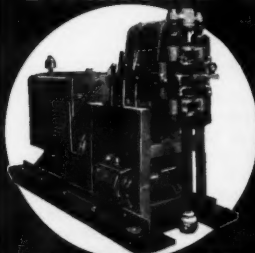
I-T-E CIRCUIT BREAKER CO.
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TESTING COAL AND ALL MINERAL PROPERTIES—USING OUR LIGHT GASOLINE DRILLS..THEY SAVE FUEL AND MOVING COSTS..WE GUARANTEE SATISFACTORY AND PROPER CORES..

PRE-PRESSURE GROUTING FOR MINE SHAFTS...GROUND SOLIDIFICATION FOR WET MINE AREAS BY OUR STOP GROUT METHOD, WATER WELLS AND DISCHARGE HOLES DRILLED AND GROUTED...ELECTRIC DRILLS FOR INSIDE MINE DRILLING..

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Our specialty—Testing bituminous coal lands
Satisfactory cores guaranteed

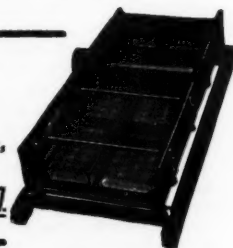
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RACINE — WISCONSIN



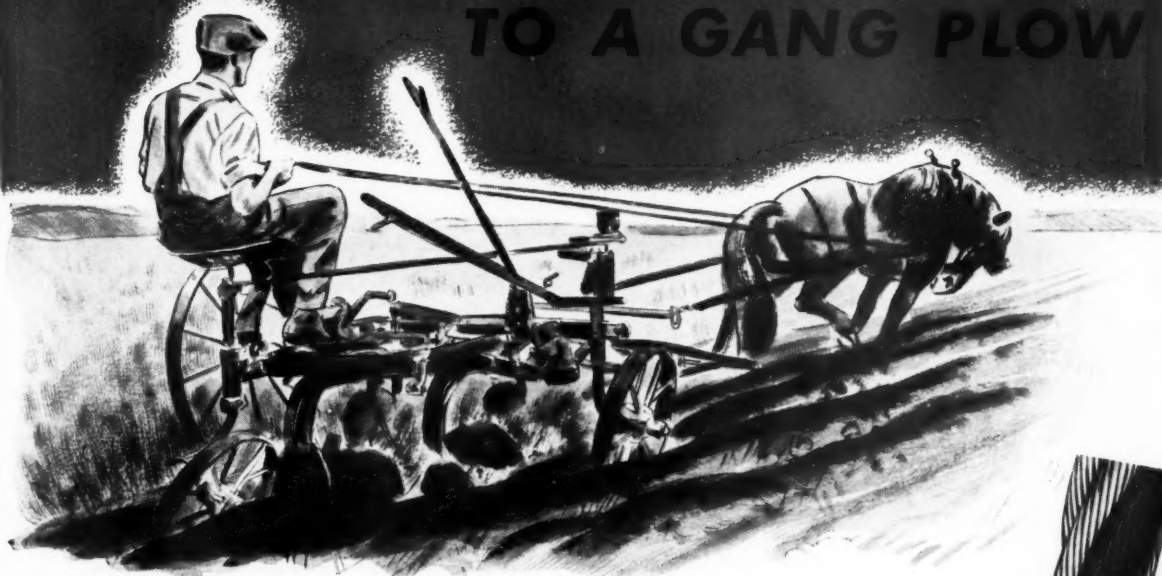
We Look Into the Earth

By using Diamond Core Drills. We prospect Coal and Mineral Lands in any part of North or South America.

Pennsylvania Drilling Co.
Pittsburgh, Pa.
Drilling Contractors



YOU WOULDN'T HITCH A *Shetland Pony*
TO A GANG PLOW



Don't Expect Wire Rope to Work Too Hard, Either



When you overload wire rope you reduce its safety factor and thereby limit its efficiency and shorten its life. Wire rope that doesn't have an adequate factor of safety (the ratio between the rated breaking strength of the rope and the load applied) can't bend as it should and fatigues rapidly. On the other hand, when a wire rope has an adequate factor of safety its service life is materially increased. For instance, a rope having a safety factor of 6 often lasts twice as long as the same rope having a safety factor of only 4.



Preforming Helps Maintain the Safety Factor

In ordinary wire rope there is frequently unbalanced strand tension which causes "high" or "low" stranding. Preforming wire rope largely eliminates this condition and leaves each strand free to bear its full part of the load. Thus **TRU-LAY Preformed Wire Rope** frequently helps maintain the original safety factor.

American Cable engineers are glad to recommend the proper rope for your needs. They know the minimum safety factor for all applications (determined after many years of laboratory testing and field work) and recommend ropes they know will give the greatest dollar value. Let us help you with your wire rope problems—of course, without obligation.

AMERICAN CABLE DIVISION • WILKES-BARRE, PENNSYLVANIA

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